Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F	TN0078620		D
1	2 13	14	15

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING ADDRESS
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)	16	X 17	18	B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)	X 19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	22	X 23	24	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)	25	X 26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	28	X 29	30	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	31	X 32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	34	X 35	36	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	37	X 38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)	40	X 41	42	J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)	43	X 44	45

III. NAME OF FACILITY

C 1 SKIP: Cypress Creek

15 | 16 – 29 | 30 69

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2 William Thompson Owner	(731) 571-3429
15 16 45	46 48 49 51 52- 55

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3 238 Red McCorkle Road

15 | 16 45

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 Union City	Tn	38261
15 16 40	41 42	47 51

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5 238 Red McCorkle Road

15 | 16 45

B. COUNTY NAME

Obion

46 70

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6 Union City	Tn	38261	
15 16 40	41 42	47 51	52 -54

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
0213 *(specify)* Swine Production	*(specify)*

C. THIRD	D. FOURTH
(specify)	*(specify)*

VIII. OPERATOR INFORMATION

A. NAME: William Thompson

B. Is the name listed in Item VIII-A also the owner? ☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P — *(specify)* Private

D. PHONE *(area code & no.)*: A (731) 571-3429

E. STREET OR P.O. BOX: 238 Red McCorkle Road

F. CITY OR TOWN: Union City

G. STATE: Tn

H. ZIP CODE: 38261

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
9 N SOPC00198 SOPCD0008	9 P

B. UIC *(Underground Injection of Fluids)*	E. OTHER *(specify)*
9 U	9 *(specify)*

C. RCRA *(Hazardous Wastes)*	E. OTHER *(specify)*
9 R	9 *(specify)*

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

This site has six buildings with underfloor pits for storage. Also has 2 lagoons that manure is no longer being added to.

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
X BILL THOMPSON		5/8/17

COMMENTS FOR OFFICIAL USE ONLY

EPA Form 3510-1 (8-90)

Form Approved
OMB No. 2040-0250
Approval expires 12-15-05

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
TN0078620

FORM 2B NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATIONS FOR PERMIT TO DISCHARGE WASTEWATER
CONCENTRATED ANIMAL FEEDING OPERATIONS AND AQUATIC ANIMAL PRODUCTION FACILITIES

I. GENERAL INFORMATION

Applying for: Individual Permit ☐ Coverage Under General Permit ☐

A. TYPE OF BUSINESS	B. CONTACT INFORMATION	C. FACILITY OPERATION STATUS
☒ 1. Concentrated Animal Feeding Operation (complete items B, C, D, and Section II) ☐ 2. Concentrated Aquatic Animal Production Facility (complete items B, C, and section III)	Owner/or Operator Name: William Thompson Telephone: (731) 571-3429 Address: 238 Red McCorkle Road Facsimile: ( ) City: Union City State: Tn Zip Code: 38261	☒ 1. Existing Facility ☐ 2. Proposed Facility

D. FACILITY INFORMATION

Name: Cypress Creek Farm Telephone: (731) 571-3429
Address: 238 Red McCorkle Road Facsimile: ( )
City: Union City State: Tn Zip Code: 38261
County: Obion Latitude: 36.349456 Longitude: -88.957258

If contract operation: Name of Integrator: Tosh Pork
Address of Integrator: 1586 Atlantic Ave Henry Tn 38231

II. CONCENTRATED ANIMAL FEEDING OPERATION CHARACTERISTICS

A. TYPE AND NUMBER OF ANIMALS

1. TYPE	2. ANIMALS: NO. IN OPEN CONFINEMENT	2. ANIMALS: NO. HOUSED UNDER ROOF
☐ Mature Dairy Cows		
☐ Dairy Heifers		
☐ Veal Calves		
☐ Cattle (not dairy or veal)		
☒ Swine (55 lbs. or over)		12,000.00
☐ Swine (under 55 lbs.)		
☐ Horses		
☐ Sheep or Lambs		
☐ Turkeys		

B. Manure, Litter and/or Wastewater Production and Use

a) How much manure, litter and wastewater is generated annually by the facility? _____ tons 4200000 gallons

b) If land applied how many acres of land under the control of the applicant are available for applying the CAFOs manure/litter/wastewater? 1324 acres

c) How many tons of manure or litter, or gallons of waste-water produced by the CAFO will be transferred annually to other persons? tons/gallons *(circle one)* 0 gallons

❑ Chickens (Broilers)		
❑ Chickens (Layers)		
❑ Ducks		
❑ Other Specify _____		
3. TOTAL ANIMALS		12,000.00

C. ❑ TOPOGRAPHIC MAP

D. TYPE OF CONTAINMENT, STORAGE AND CAPACITY

1. Type of Containment	Total Capacity (in gallons)
☒ Lagoon	7744134
❑ Holding Pond	
❑ Evaporation Pond	
❑ Other: Specify _____	

2. Report the total number of acres contributing drainage: _____ acres

3. Type of Storage	Total Number of Days	Total Capacity (gallons/tons)
☒ Anaerobic Lagoon		8905594
❑ Storage Lagoon		
❑ Evaporation Pond		
❑ Aboveground Storage Tanks		
☒ Belowground Storage Tanks	204.00	4970384
❑ Roofed Storage Shed		
❑ Concrete Pad		
❑ Impervious Soil Pad		
❑ Other: Specify _____		

E. NUTRIENT MANAGEMENT PLAN

A. Has a nutrient management plan been developed? ☒ Yes ☐ No

B. Is a nutrient management plan being implemented for the facility? ☒ Yes ☐ No

C. If no, when will the nutrient management plan be developed? Date: _____

D. The date of the last review or revision of the nutrient management plan. Date: _____

E. If not land applying, describe alternative use(s) of manure, litter and or wastewater:

Form Approved
OMB No. 2040-0250
Approval expires 12-15-05

F. LAND APPLICATION BEST MANAGEMENT PRACTICES
Please check any of the following best management practices that are being implemented at the facility to control runoff and protect water quality:

❑ Buffers ❑ Setbacks ❑ Conservation tillage ❑ Constructed wetlands ❑ Infiltration field ❑ Grass filter ❑ Terrace

III. CONCENTRATED AQUATIC ANIMAL PRODUCTION FACILITY CHARACTERISTICS

A. For each outfall give the maximum daily flow, maximum 30-day flow, and the long-term average flow.

1. Outfall No.	2. Flow (*gallons per day*)		
	a. Maximum Daily	b. Maximum 30 Day	c. Long Term Average

B. Indicate the total number of ponds, raceways, and similar structures in your facility.

1. Ponds	2. Raceways	3. Other

C. Provide the name of the receiving water and the source of water used by your facility.

1. Receiving Water	2. Water Source

D. List the species of fish or aquatic animals held and fed at your facility. For each species, give the total weight produced by your facility per year in pounds of harvestable weight, and also give the maximum weight present at any one time.

1. Cold Water Species			2. Warm Water Species		
a. Species	b. Harvestable Weight (*pounds*)		a. Species	b. Harvestable Weight (*pounds*)	
	(1) Total Yearly	(2) Maximum		(1) Total Yearly	(2) Maximum

E. Report the total pounds of food during the calendar month of maximum feeding.

1. Month	2. Pounds of Food

IV. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. Name and Official Title (*print or type*)	B. Phone No. (731) 571-3429
X BILL THOMPSON	
C. Signature	D. Date Signed
BCO	5/8/17

Form Approved
OMB No. 2040-0250
Approval expires 12-15-05

INSTRUCTIONS

GENERAL

This form must be completed by all applicants who check "yes" to Item II-B in Form 1. Not all animal feeding operations or fish farms are required to obtain NPDES permits. Exclusions are based on size. See the description of these statutory and regulatory exclusions in the General Instructions that accompany Form 1.

For aquatic animal production facilities, the size cutoffs are based on whether the species are warm water or cold water, on the production weight per year in harvestable pounds, and on the amount of feeding in pounds of food (*for cold water species*). Also, facilities which discharge less than 30 days per year, or only during periods of excess runoff (*for warm water fish*) are not required to have a permit.

Refer to the Form 1 instructions to determine where to file this form.

Item I-A

See the note above and the General Instructions which accompany Form 1 to be sure that your facility is a "concentrated animal feeding operation" (CAFO).

Item I-B

Use this space to give owner/operator contact information.

Item I-C

Check "proposed" if your facility is not now in operation or is expanding to meet the definition of a CAFO in accordance with the information found in the General Instructions that accompany Form 1.

Item I-D

Use this space to give a complete legal description of your facility's location including name, address, and latitude/longitude. Also, the if a contract grower, the name and address of the integrator.

Item II

Supply all information in item II if you checked (1) in item I-A.

Item II-A

Give the maximum number of each type of animal in open confinement or housed under roof (either partially or totally) which are held at your facility for a total of 45 days or more in any 12 month period. Provide the total number of animals confined at the facility.

Item II-B

Provide the total amount of manure, litter and wastewater generated annually by the facility. Identify if manure, litter and wastewater generated by the facility is to be land applied and the number of acres, under the control of the CAFO operator, suitable for land application. If the answer to question 3 is yes, provide the estimated annual quantity of manure, litter and wastewater that the applicant plans to transfer off-site.

Item II-C

Check this box if you have submitted a topographic map of the geographic area in which the CAFO is located showing the specific location of the production area.

Item II-D

1. Provide information on the type of containment and the capacity of the containment structure (s).
2. The number of acres that are drained and collected in the containment structure (s).
3. Identify the type of storage for the manure, litter and/or wastewater. Give the capacity of this storage in days and gallons or tons.

Item II-E

Provide information concerning the status of the development and implementation of a nutrient management plan for the facility. In those cases where the nutrient management plan has not been completed, provide an estimated date of development and implementation. If not land applying, describe the alternative uses of the manure, litter and wastewater (e.g., composting, pelletizing, energy generation, etc.).

Item II-F

Check any of the identified conservation practices that are being implemented at the facility to control runoff and protect water quality.

Item III

Supply all information in Item III if you checked (2) in Item I-A.

Item III-A

Outfalls should be numbered to correspond with the map submitted in Item XI of Form 1. Values given for flow should be representative of your normal operation. The maximum daily flow is the maximum measured flow occurring over a calendar day. The maximum 30-day flow is the average of measured daily flow over the calendar month of highest flow. The long-term average flow is the average of measure daily flows over a calendar year.

Item III-B

Give the total number of discrete ponds or raceways in your facility. Under "other," give a descriptive name of any structure which is not a pond or a raceway but which results in discharge to waters of the United States.

Item III-C

Use names for receiving water and source of water which correspond to the map submitted in Item XI of Form 1.

Item III-D

The names of fish species should be proper, common, or scientific names as given in special Publication No. 6 of the American Fisheries Society. "A List of Common and Scientific Names of Fishes from the United States and Canada." The values given for total weight produced by your facility per year and the maximum weight present at any one time should be representative of your normal operation.

Item III-E

The value given for maximum monthly pounds of food should be representative of your normal operation.

Item IV

The Clean Water Act provides for severe penalties for submitting false information on this application form.

Section 309(C)(2) of the Clean Water Act provides that "Any person who knowingly makes any false statement, representation, or certification in any application...shall upon conviction, be punished by a fine of no more than $10,000 or by imprisonment for not more than six months, or both."

Federal regulations require the certification to be signed as follows:

A. For corporation, by a principal executive officer of at least the level of vice president.

B. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

C. For a municipality, State, Federal, or other public facility, by either a principal executive officer or ranking elected official.

Paper Reduction Act Notice

The Public reporting burden for this collection of information estimated to average 4 hours per response. The estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information to the chief, Information Policy Branch (PM-223), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20460, and the Office of Information and Regulatory Afairs, Office of Management and Budget, Washington, D.C. 20503, marked Attention: Desk Officer for EPA.

NRCS Natural Resources Conservation Service

Comprehensive Nutrient Management Plan (CNMP)
(Version 3, 8/17/2016 Format)

The Comprehensive Nutrient Management Plan (CNMP) is an important part of the conservation management system (CMS) for your Animal Feeding Operation (AFO). This CNMP documents the planning decisions and operation and maintenance information for the AFO.

Farm/Facility: Cypress Creek
c/o Bill Thompson
238 Red McCorkle Road
Union City, TN
731-571-3429

Owner/Operator:

Plan Period: Mar 2017 - Feb 2022

Certified Comprehensive Nutrient Management Plan (CNMP) Planner

As a Certified Comprehensive Nutrient Management Plan (CNMP) Planner, I certify that I have reviewed the *Comprehensive Nutrient Management Plan* and that the elements of the document are technically compatible, reasonable and can be implemented.

Signature: _____ Date: 4-21-17
Name:
Title: TSP Certification Credentials:

Conservation District (Optional)

As a Conservation District employee, I have reviewed the *Comprehensive Nutrient Management Plan* and concur that the plan meets the District's conservation goals.

Signature: _____ Date: _____
Name:
Title:

Owner/Operator

As the owner/operator of this CNMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the CNMP are needed. I understand that I am responsible for keeping all necessary records associated with implementation of this CNMP. It is my intention to implement/accomplish this CNMP in a timely manner as described in the plan.

Signature: _____ Date: 5/8/17
Name:

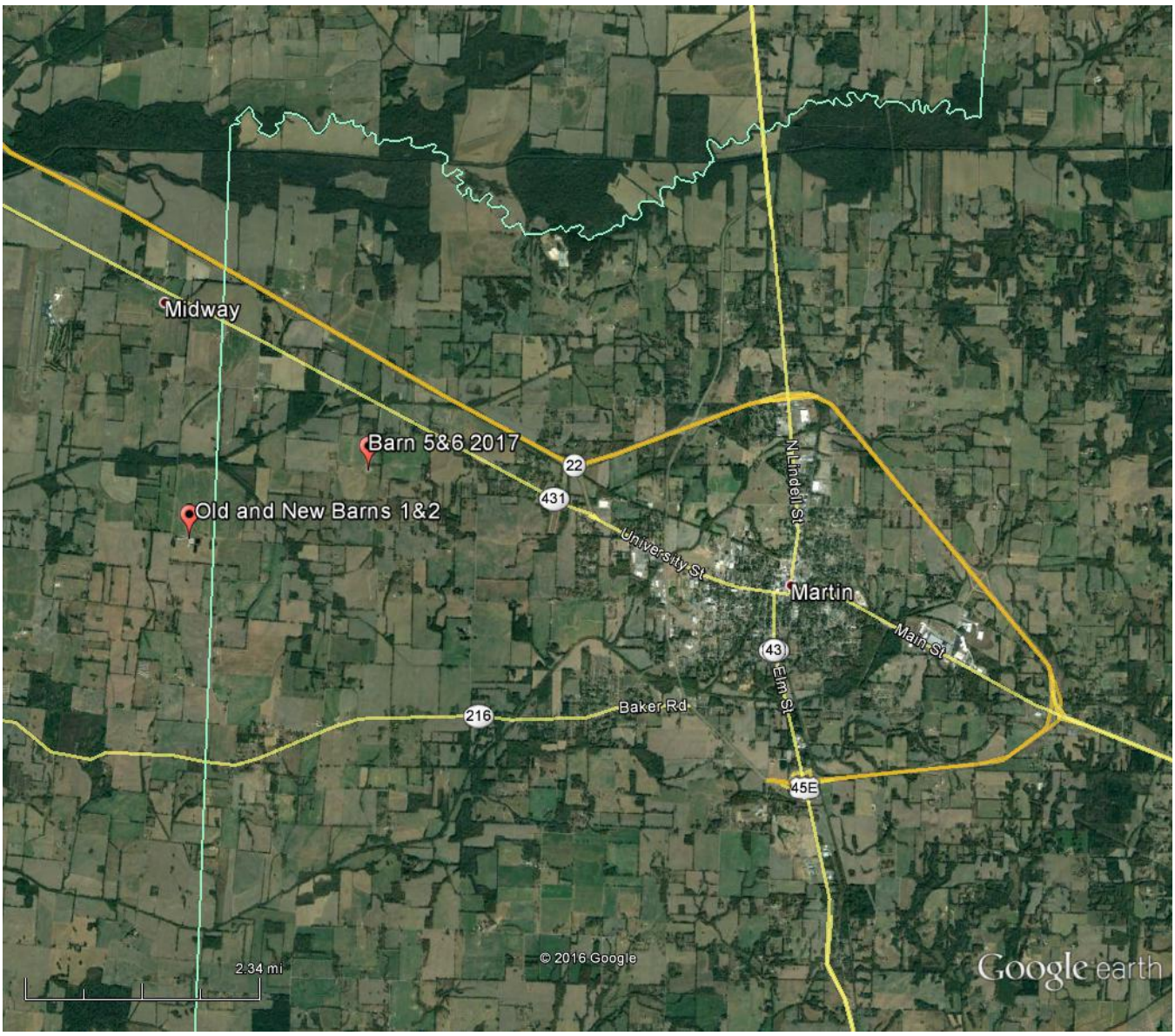
Table of Contents

Section 1. Farmstead (Production Area)

1.1. Maps of Existing and Planned Farmstead Conservation Practices

New Barn 1&2 Old Barn 1&2 South Lagoon North Lagoon

Barn 5&6 2017


Midway
Barn 5&6 2017
Old and New Barns 1&2
22
431
University St
N Lindell St
Martin
Main St
43
Elm St
216
Baker Rd
45E
2.34 mi
© 2016 Google
Google earth


N
W
E
S

1.2. Farmstead Conservation Practices -- Record of Decisions

Waste Storage Facility (313)

Facility(s)	Planned amount (No.)	Month	Year	Amount Applied	Date
6	6	3	2017		
Total	6				

A waste impoundment structure has been constructed, according to NRCS specifications to temporarily store waste such as manure, wastewater, and contaminated runoff as a function of an agricultural waste management system which will protect the environment and public health and safety. Practice lifespan is 15 years. Refer to design drawings and practice standard 313 for additional information.

Composting Facility (317)

Create composting facility to properly dispose of dead hogs. Compost will need to be tested for nutrient levels. See Practice Standard 317.

Field(s)	Planned amount (No.)	Month	Year	Amount Applied	Date
1	1.0	3	2017		
Total	1.0				

All dead pigs must be immediately put in the compost facility and covered with a carbon matter. Suggested carbon matter is sawdust.

All NRCS conservation practices shall be installed, operated and maintained according to NRCS conservation practice standards and associated technical specifications.

1.3. Farmstead Conservation Practices – Implementation Requirements

Extension

W255

Disposing of Large Animal Mortalities in Tennessee

Forbes Walker, Associate Professor, and Shawn Hawkins, Assistant Professor
Biosystems Engineering and Soil Science

Animal deaths are a regrettable but sometimes unavoidable part of livestock production. Once an animal dies, it is important to handle and dispose of the carcass in a way that reduces the potential for impacting the health of humans and other livestock and minimizes the impact to the environment, such as pollution of groundwater or surface water. It is recommended that dead animals be disposed of within 48 hours of discovery in a way that follows state guidelines.

In May 2009, the Tennessee Department of Agriculture released its guidelines on handling mortalities in a short policy document entitled "Policy Concerning the Disposal of Dead Farm Animals and The Disposal Offal from Custom Slaughter Facilities." This document can be viewed at the Tennessee Department of Agriculture's website at: http://tn.gov/agriculture/publications/regulatory/animaldisposal.pdf

In Tennessee, dead animal carcasses are defined as a "solid waste," so are regulated by the Tennessee Department of the Environment and Conservation (TDEC), Division of Solid Waste. The disposal of dead animals falls under the solid waste regulations outlined by TDEC at its website: http://www.tennessee.gov/sos/rules/1200/1200-01/1200-01-07.20081126.pdf

The methods that livestock producers in Tennessee can choose to dispose of their dead animals include:

- On-farm burial
- Composting
- Landfilling
- Burning
- Incineration
- Rendering

the center of this base material with the extremities at least 2 feet away from the edge of the base material. Finally, the carcass should be covered with 2 feet of amendment that is mounded to divert rather than capture rainfall. The process will be complete in 3-9 months (only bones are left) and the material can then be land-applied.

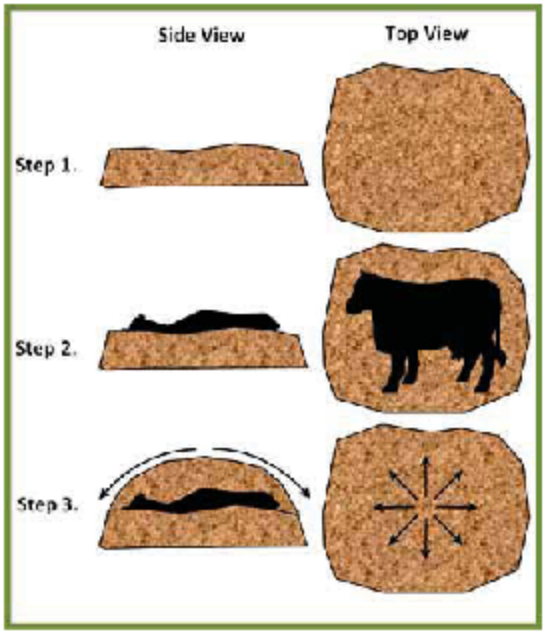


Figure 1. Top and side view schematics illustrating static pile composting of a large animal mortality. Rainfall drainage is illustrated in Step 3.

THE UNIVERSITY of TENNESSEE
INSTITUTE of AGRICULTURE

Visit the UT Extension website at
http://utextension.tennessee.edu

W-251 2/11 11-0123

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development.
University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating.
UT Extension provides equal opportunities in programs and employment.

1.4. Animal Inventory

Animal Group	Type or Production Phase	Number of Animals[a]	Average Weight (lbs)	Confinement Period	Manure Collected (%)[b]	Manure Storage

Animal Group	Type or Production Phase	Number of Animals[a]	Average Weight (lbs)	Confinement Period	Manure Collected (%)[b]	Manure Storage
Pigs 1	Wean-to-finish pig	2,600	140	Jan Early - Dec Late	100	New Barn 1
Pigs 2	Wean-to-finish pig	2,600	140	Jan Early - Dec Late	100	New Barn 2
Pigs 3	Wean-to-finish pig	800	140	Jan Early - Dec Late	100	Old Barn 1
Pigs 4	Wean-to-finish pig	800	140	Jan Early - Dec Late	100	Old Barn 2
Pigs 5	Wean-to-finish pig	2,600	140	Jan Early - Dec Late	100	Barn 5 (2017)
Pigs 6	Wean-to-finish pig	2,600	140	Jan Early - Dec Late	100	Barn 6 (2017)

a. The average number of animals present in the production facility at any one time.
b. If manure collected is less than 100%, this indicates that the animals spend a portion of the day outside of the production facility or the production facility is unoccupied one or more times during the confinement period.

1.5. Manure Storage Information

Storage ID	Type of Storage	Pumpable or Spreadable Capacity	Annual Manure Collected	Maximum Days of Storage
New Barn 1	In-house storage pit	1,092,596 gal	900,000 gal	443
New Barn 2	In-house storage pit	1,092,596 gal	900,000 gal	443
Old Barn 1	In-house storage pit	167,552 gal	300,000 gal	204
Old Barn 2	In-house storage pit	167,552 gal	300,000 gal	204
North Lagoon	Lagoon	3,789,368 gal	0 gal	
South Lagoon	Lagoon	2,355,452 gal	0 gal	
Barn 5 (2017)	In-house storage pit	1,092,596 gal	900,000 gal	443
Barn 6 (2017)	In-house storage pit	1,092,596 gal	900,000 gal	443

1.6. Planned Manure Exports

Month-Year	Manure Source	Amount	Receiving Operation	Location
Mar 2019	Barn 5 (2017)	1,000,000 gal	Reams Farms	South Fulton TN
Mar 2021	Barn 5 (2017)	300,000 gal	Reams Farms	South Fulton, TN
Mar 2021	New Barn 1	400,000 gal	Reams Farms	South Fulton TN
Mar 2021	New Barn 2	800,000 gal	Reams Farms	South Fulton Tn
Mar 2021	Old Barn 1	100,000 gal	Reams Farms	South Fulton, Tn
Mar 2021	Old Barn 2	110,000 gal	Reams Farms	South Fulton, TN

1.7. Planned Manure Imports

Month-Year	Manure's Animal Type	Amount	Originating Operation	Location

(None)

1.8. Planned Internal Transfers of Manure

Month-Year	Manure Source	Amount	Manure Destination
Nov 2017	Old Barn 1	170,000 gal	New Barn 1
Nov 2017	Old Barn 2	170,000 gal	New Barn 2
Nov 2018	Old Barn 1	150,000 gal	New Barn 2
Nov 2018	Old Barn 2	150,000 gal	New Barn 2
Aug 2019	Old Barn 2	170,000 gal	New Barn 1
Oct 2019	Old Barn 1	170,000 gal	New Barn 2

1.9. Brief Description of or Additional Information about Animal Feeding Operation (Optional)

Bill Thompson owns and operates a finishing operation that consist of 12,000 pigs. Tosh Pork provides the pigs. The animals are in 6 barns, 4 barns in one location and 2 new barns in another location. Manure is stored in under building pits and applied to land Thompson tends. The crop rotation is corn, soybeans and wheat. The closest stream, Cypress Creek, is 600 feet away and eventually flows into the North Fork Obion River, which is not impaired.

1.2. Sampling, Calibration and Other Statements

- Manure sampling frequency
  Manure test will be taken each time manure is sold.

- Soil testing frequency
  No soil testing is required

- Equipment calibration method and frequency
  No calibration required manure is sold.

- Clean water diversion
  No clean water will enter pit. It is sealed off from outside water.

- Measures to prevent direct contact of animals with water
  All animals will remain inside above the under floor pit.

1.3. Natural Resource Concerns

If checked, the indicated resource concerns have been identified and have been addressed in this plan.

Soil Quality Concerns

	Soil Quality Concern	*Activities to Address Concern*
	Ephemeral Gully Erosion	

	Soil Quality Concern	*Activities to Address Concern*
	Gully Erosion	
X	Sheet and Rill Erosion	New Barns have a silk fence around them during construction
	Stream/Ditchbank Erosion	
	Wind Erosion	

Water Quality Concerns

	Water Quality Concern	*Activities to Address Concern*
	Facility Wastewater Runoff	
	Manure Runoff (Field Application)	
	Manure Runoff (From Facilities)	
	Nutrients in Groundwater	
	Nutrients in Surface Water	
	Silage Leachate	
	Excessive Soil Test Phosphorus	
	Tile-Drained Fields	

Other Concerns Addressed

	Other Concern	*Activities to Address Concern*
	Acres Available for Manure Application	
	Aesthetics	
	Maximize Nutrient Utilization	
	Minimize Nutrient Costs	

	Other Concern	*Activities to Address Concern*
X	Neighbor Relations	Closest Neighbor 1,100 feet away.
	Profitability	
	Regulations	
	Soil Compaction	
	Time Available for Manure Application	
	Odors	
X	Air Quality	This facility shouldn't affect air quality
X	Biosecurity	Plan in place.

In Case of an Emergency Storage Facility Spill, Leak or Failure

Implement the following first containment steps:

a. Stop all other activities to address the spill.
b. Stop the flow. For example, use skid loader or tractor with blade to contain or divert spill or leak.
c. Call for help and excavator if needed.
d. Complete the clean-up and repair the necessary components.
e. Assess the extent of the emergency and request additional help if needed.

In Case of an Emergency Spill, Leak or Failure during Transport or Land Application

Implement the following first containment steps:

a. Stop all other activities to address the spill and stop the flow.
b. Call for help if needed.
c. If the spill posed a hazard to local traffic, call for local traffic control assistance and clear the road and roadside of spilled material.
d. Contain the spill or runoff from entering surface waters using straw bales, saw dust, soil or other appropriate materials.
e. If flow is coming from a tile, plug the tile with a tile plug immediately.
f. Assess the extent of the emergency and request additional help if needed.

Emergency Contacts

Department / Agency	Phone Number
Fire	731-536-5537
Rescue services	731-885-6656
State veterinarian	615-837-5183
Sheriff or local police	731-885-5832

Nearest available excavation equipment/supplies for responding to emergency

Equipment Type	Contact Person	Phone Number
Trackhoe	Jamie Tosh	731-694-8792

Contacts to be made by the owner or operator within 24 hours

Organization	Phone Number
EPA Emergency Spill Hotline	1-800-424-8802
County Health Department	731-885-8722
Other State Emergency Agency	1-888-891-8332 TDEC's Water Pollution Control

Be prepared to provide the following information:

a. Your name and contact information.
b. Farm location (driving directions) and other pertinent information.
c. Description of emergency.
d. Estimate of the amounts, area covered, and distance traveled.
e. Whether manure has reached surface waters or major field drains.
f. Whether there is any obvious damage: employee injury, fish kill, or property damage.
g. Current status of containment efforts.

Biosecurity Measures

Biosecurity is critical to protecting livestock and poultry operations. Visitors must contact and check in with the producer before visiting the operation or entering any production or storage facility.

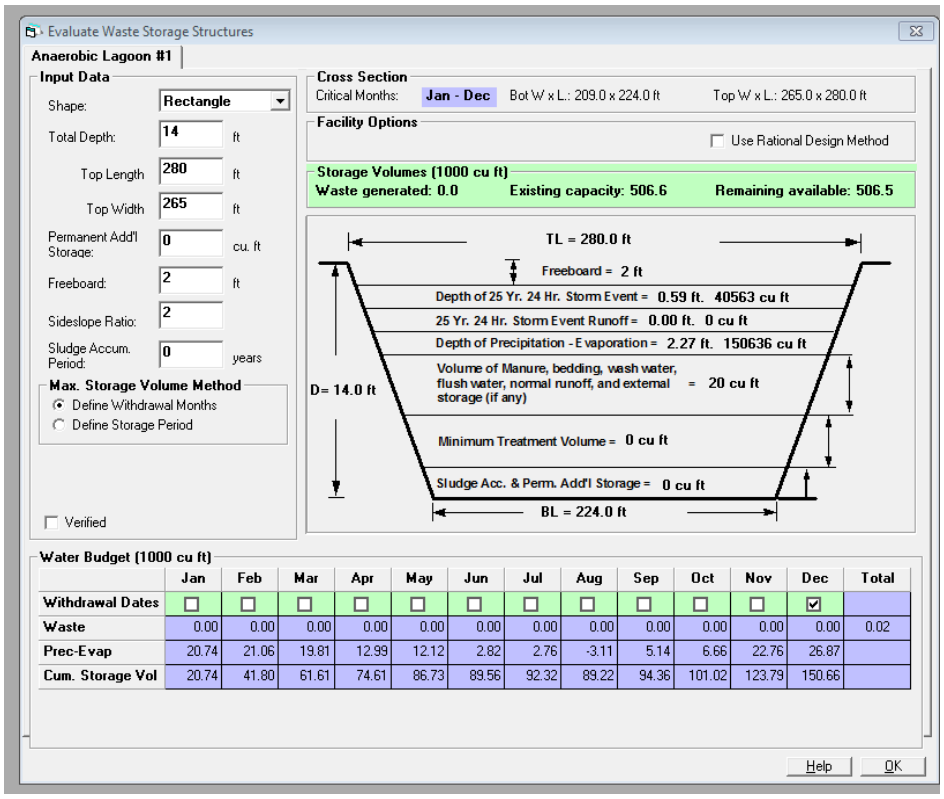
The following narrative describes how animal veterinary wastes (including medical equipment, empty containers, sharps and expired medications) will be managed at the operation.

Medicine will be disposed to as directed on label. Needles and other sharps will be put in to a sharps container. If any medicine is left it shall remain in the control rooms or in a building that is protected from outside environment and stored according to label.

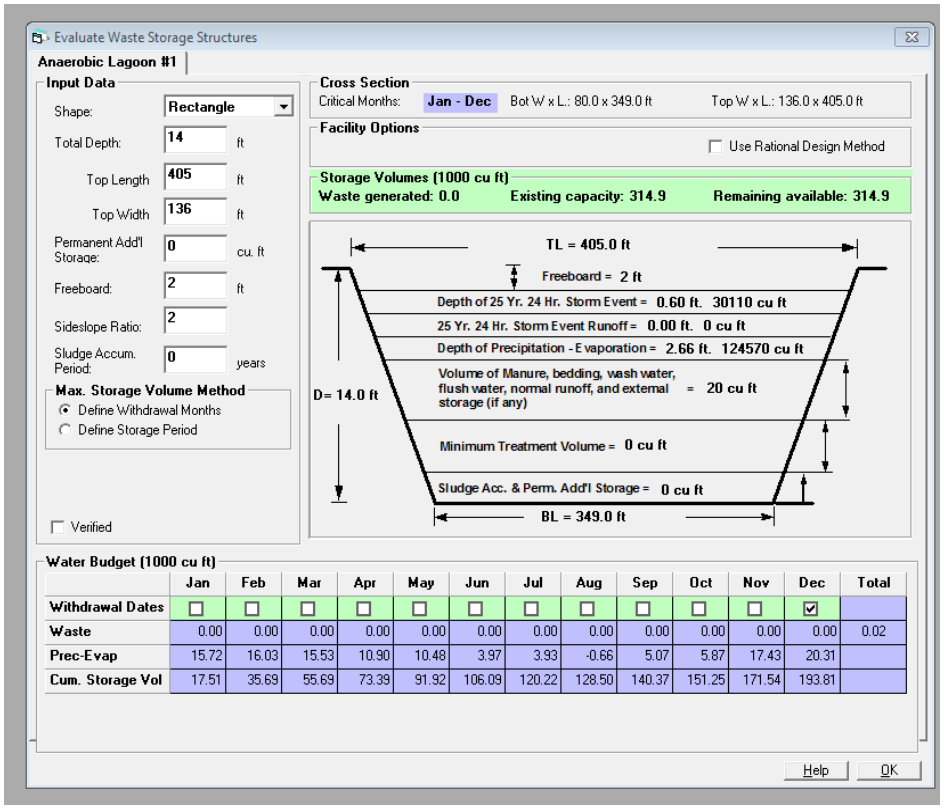
Catastrophic Animal Mortality Management

Refer to NRCS standards, or state guidance, regarding appropriate catastrophic animal mortality handling methods.

North Lagoon(No Manure is entering lagoons. AWM will not allow for 0 animals at 0 weight. Therefore the 20 cu ft of waste added is actually 0)



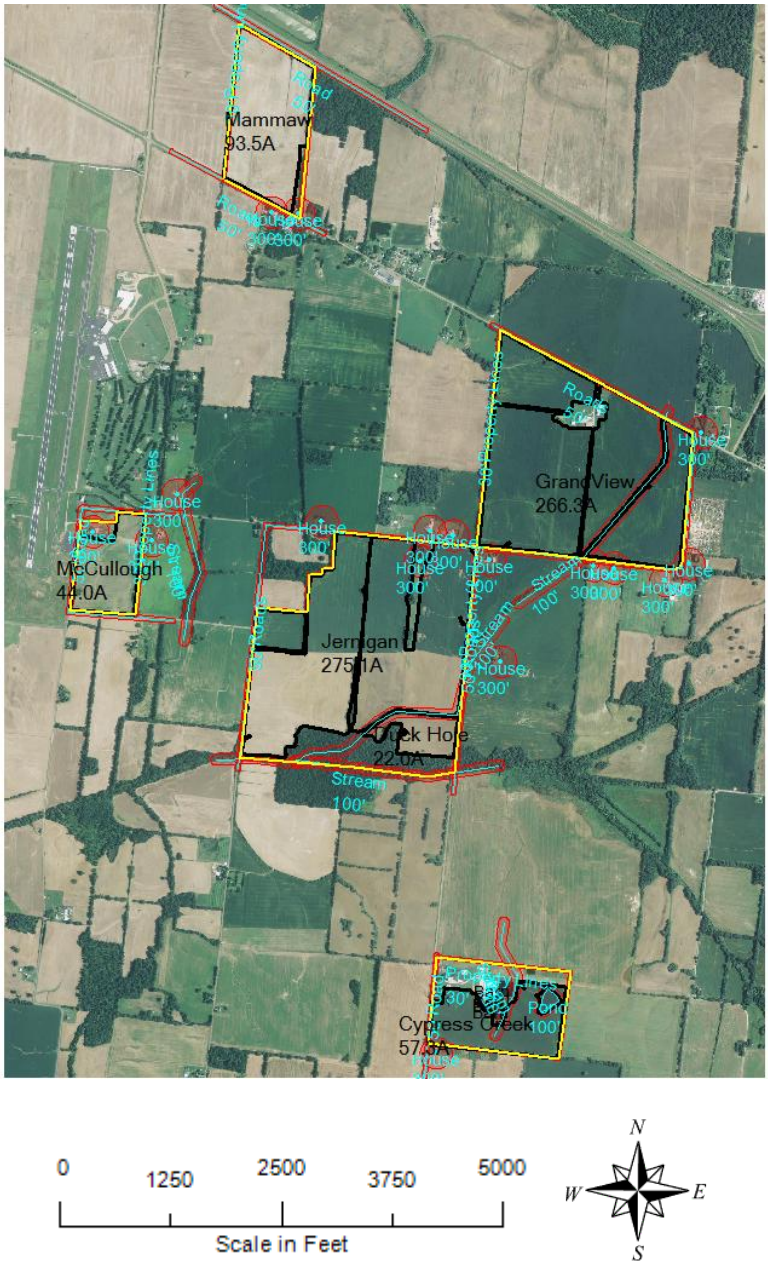
South Lagoon



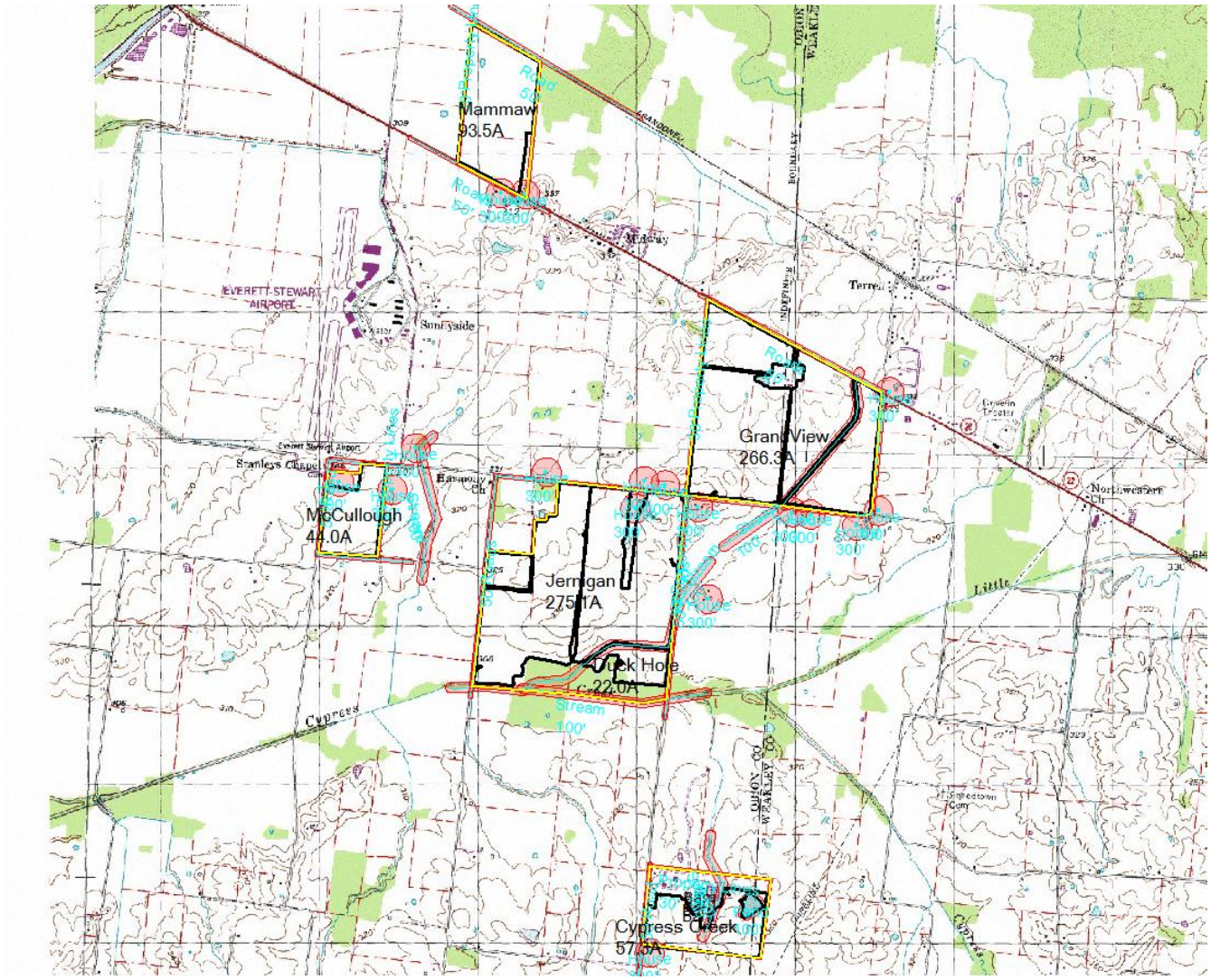
Section 2. Crop and Pasture (Land Treatment)

2.1. Maps of Fields, Soils, Application Setbacks, Existing and Planned Crop and Pasture Conservation Practices

Map with Setbacks



Topo Map


Mammaw
93.5A
EVERETT-STEWART AIRPORT
Sunnyside
Grant View
266.3A
McCullough
44.0A
Jernigan
275.1A
Duck Hole
22.0A
Cypress
Cypress Creek
57.5A
Little
0
1250
2500
3750
5000
Scale in Feet
N
W
E
S

Soil Types

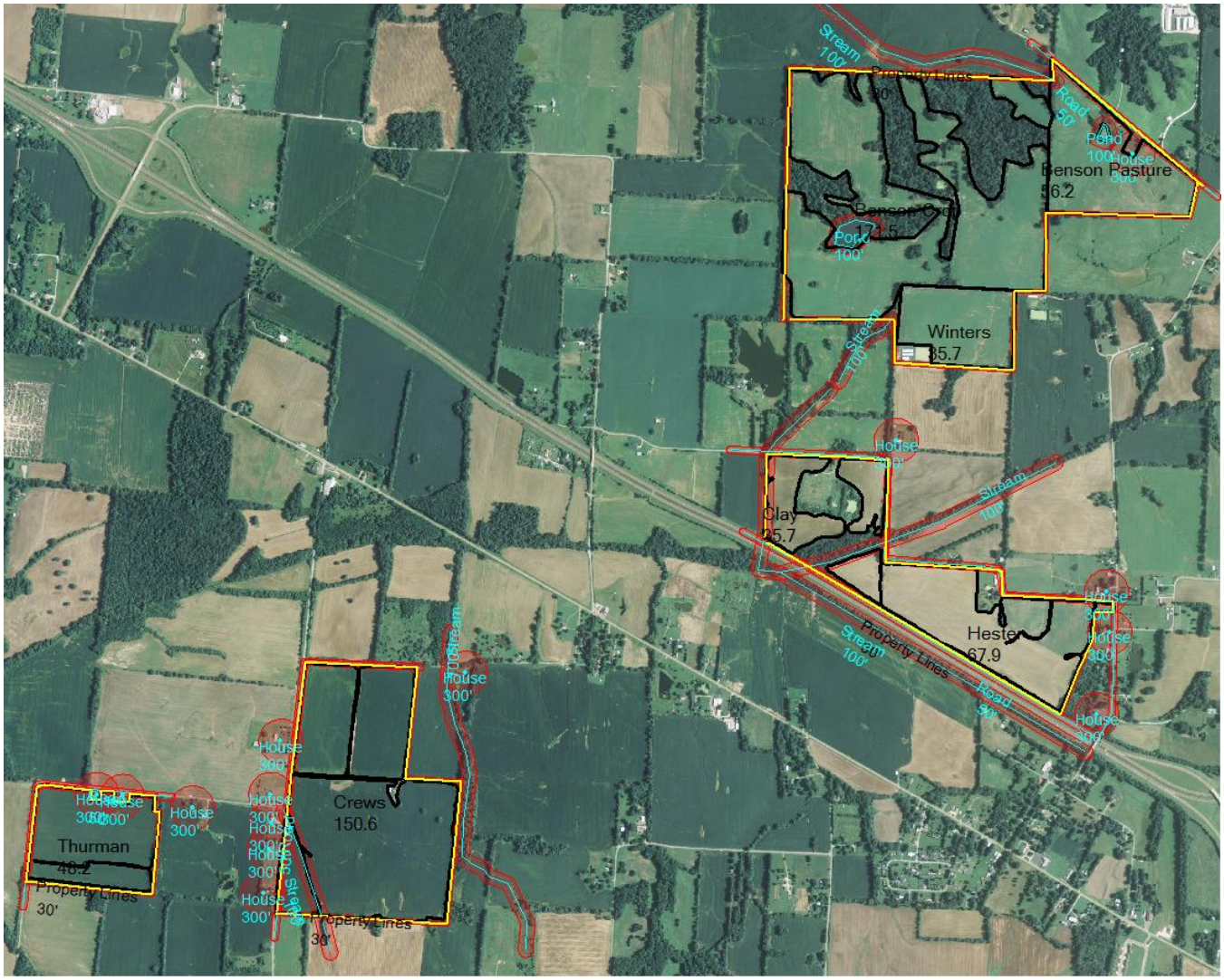
soils
- Bd
- Ca - Ce
- Ce - Cl
- Cl - Co
- Co - Fa
- Fa - Fb
- Fb - Fn
- Fn - GrB
- GrB - GrB2
- GrB2 - GrC2
- GrC2 - GrC3
- GrC3 - GrD2
- GrD2 - LoB
- LoB - LoB2
- LoB2 - LoC2
- LoC2 - LoC3
- LoC3 - LoD2
- LoD2 - LoD3
- LoD3 - MeB2
- MeB2 - MfB

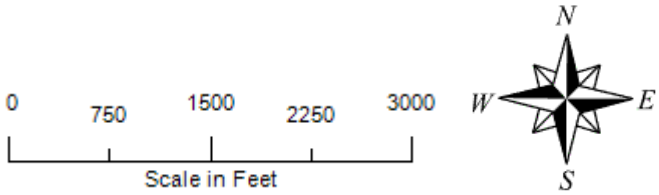
0 1250 2500 3750 5000

Scale in Feet

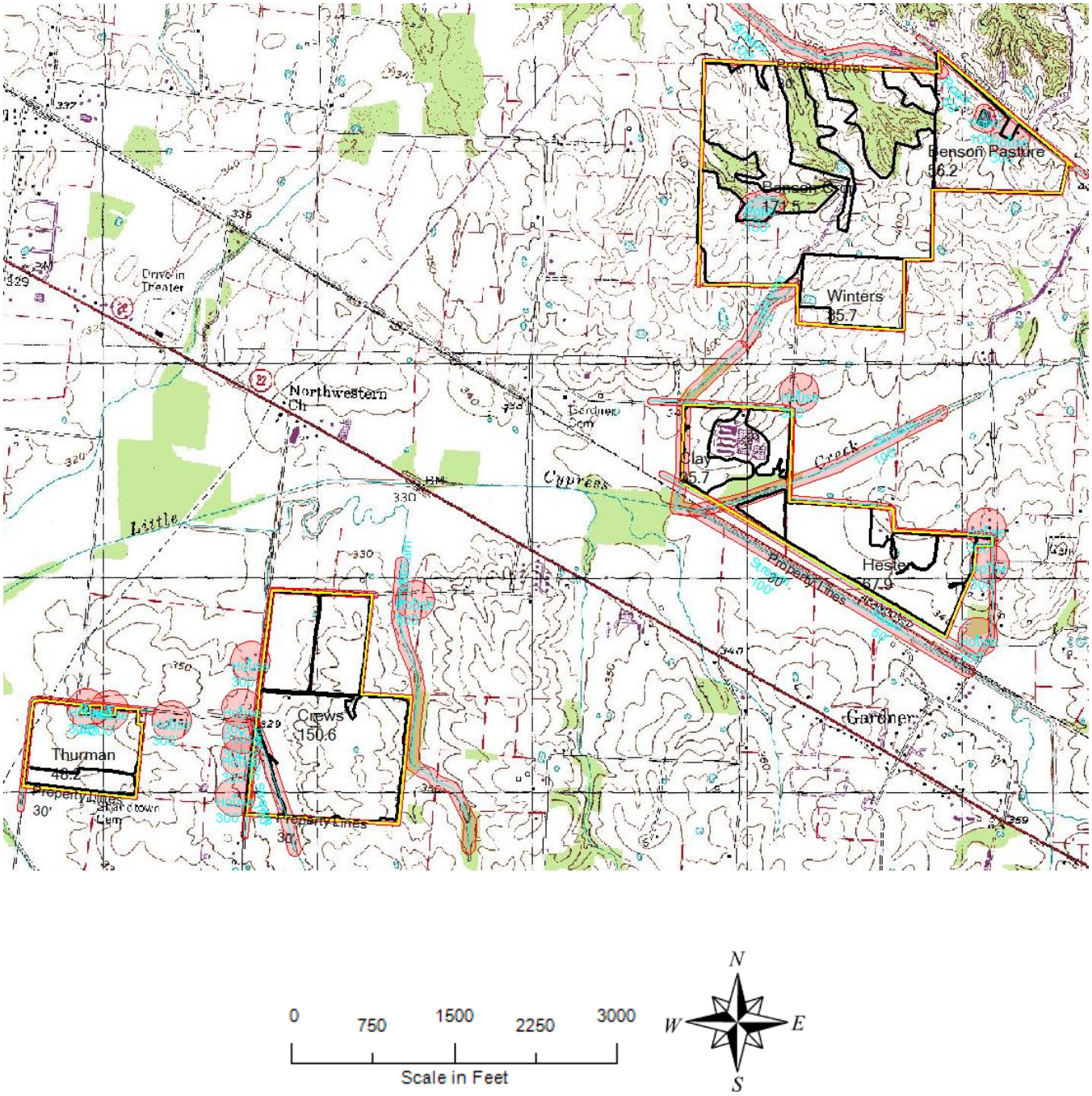
N W E S

Fields with Setbacks

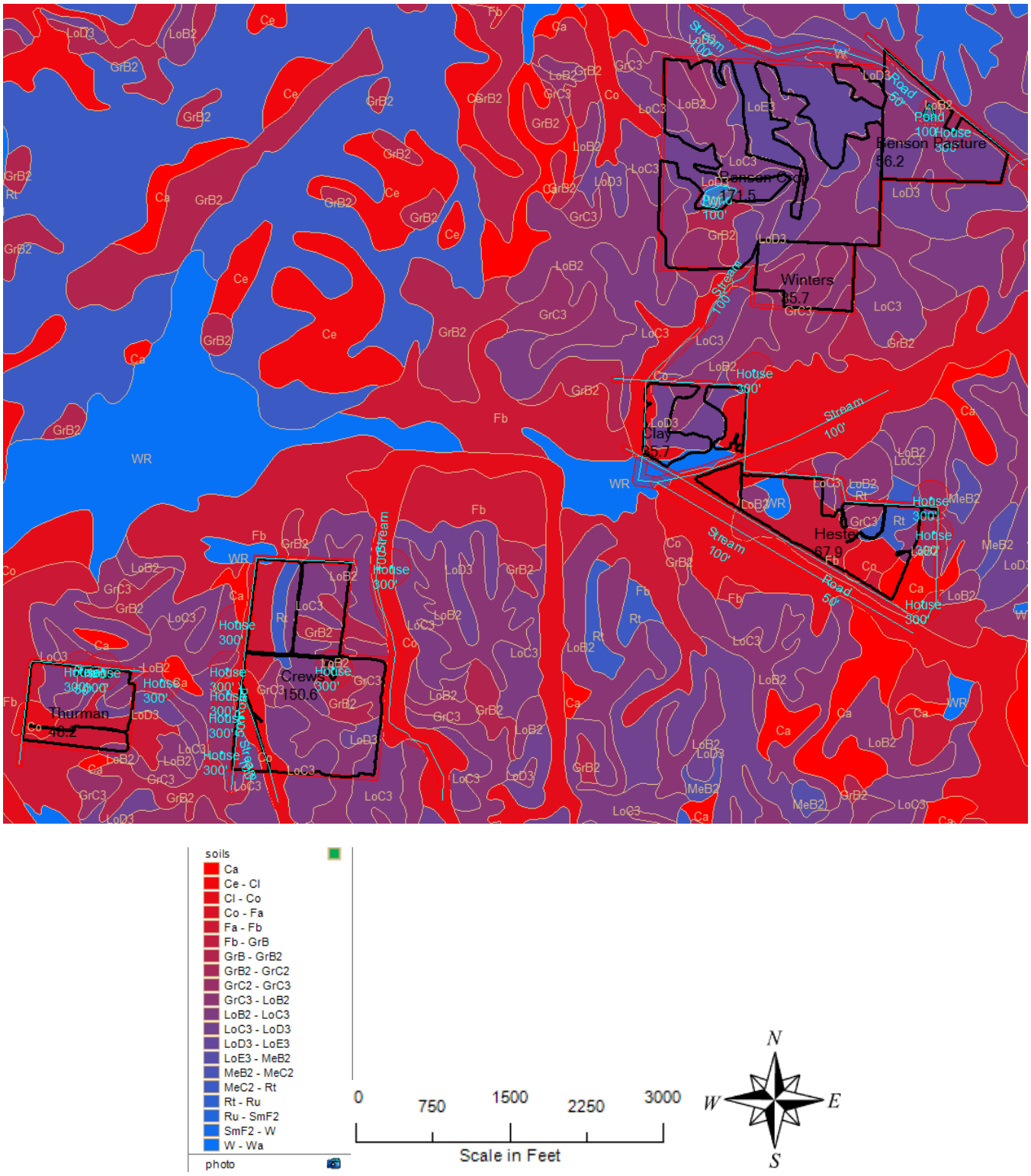




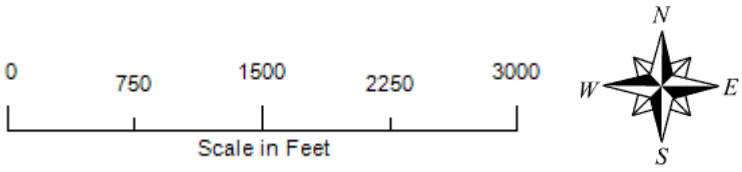
Topo Map


Property Lines
Benson Pasture
56.2
Benson Creek
17.5
Winters
35.7
Drive-in
Theater
Northwestern
Ch
Gardner
Cem
Clay
25.7
Creek
Cypress
Little
HM
330
Property Lines
Hester
67.9
Crews
150.6
Thurman
48.2
Property Lines
30'
Gardner
Property Lines
30'
Graveyard
Cem
0
750
1500
2250
3000
Scale in Feet
N
W
E
S

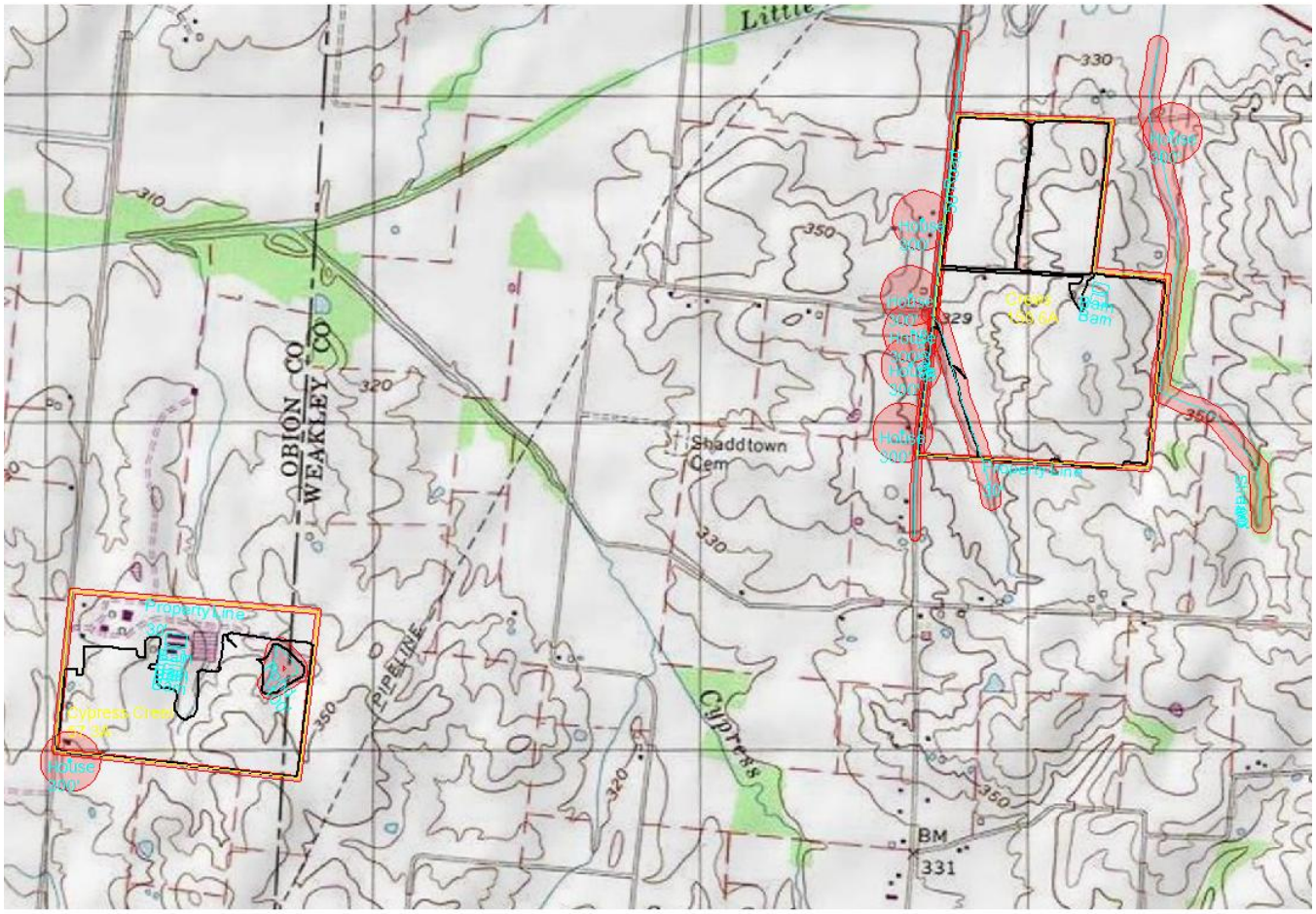
Soil Types

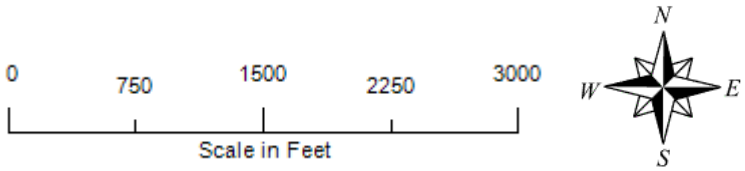

Benson Pasture
56.2
Benson Pond
71.5
Winters
15.7
Clay
25.7
Hester
67.9
Crews
150.6
Thurman
48.2
House
Stream
Road
Pond
WR
soils
Ca
Ce - Cl
Cl - Co
Co - Fa
Fa - Fb
Fb - GrB
GrB - GrB2
GrB2 - GrC2
GrC2 - GrC3
GrC3 - LoB2
LoB2 - LoC3
LoC3 - LoD3
LoD3 - LoE3
LoE3 - MeB2
MeB2 - MeC2
MeC2 - Rt
Rt - Ru
Ru - SmF2
SmF2 - W
W - Wa
photo
0
750
1500
2250
3000
Scale in Feet
N
W
E
S

Both Production Sites



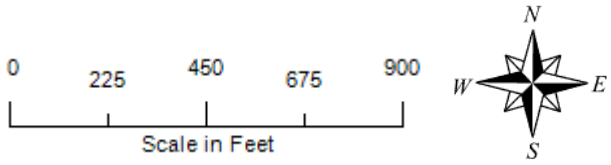
Topo of Both Sites



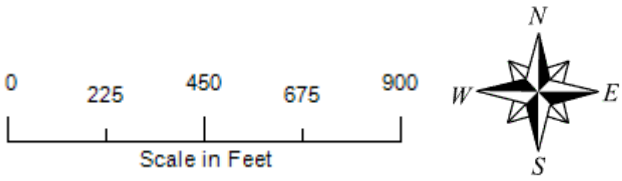


Old Site

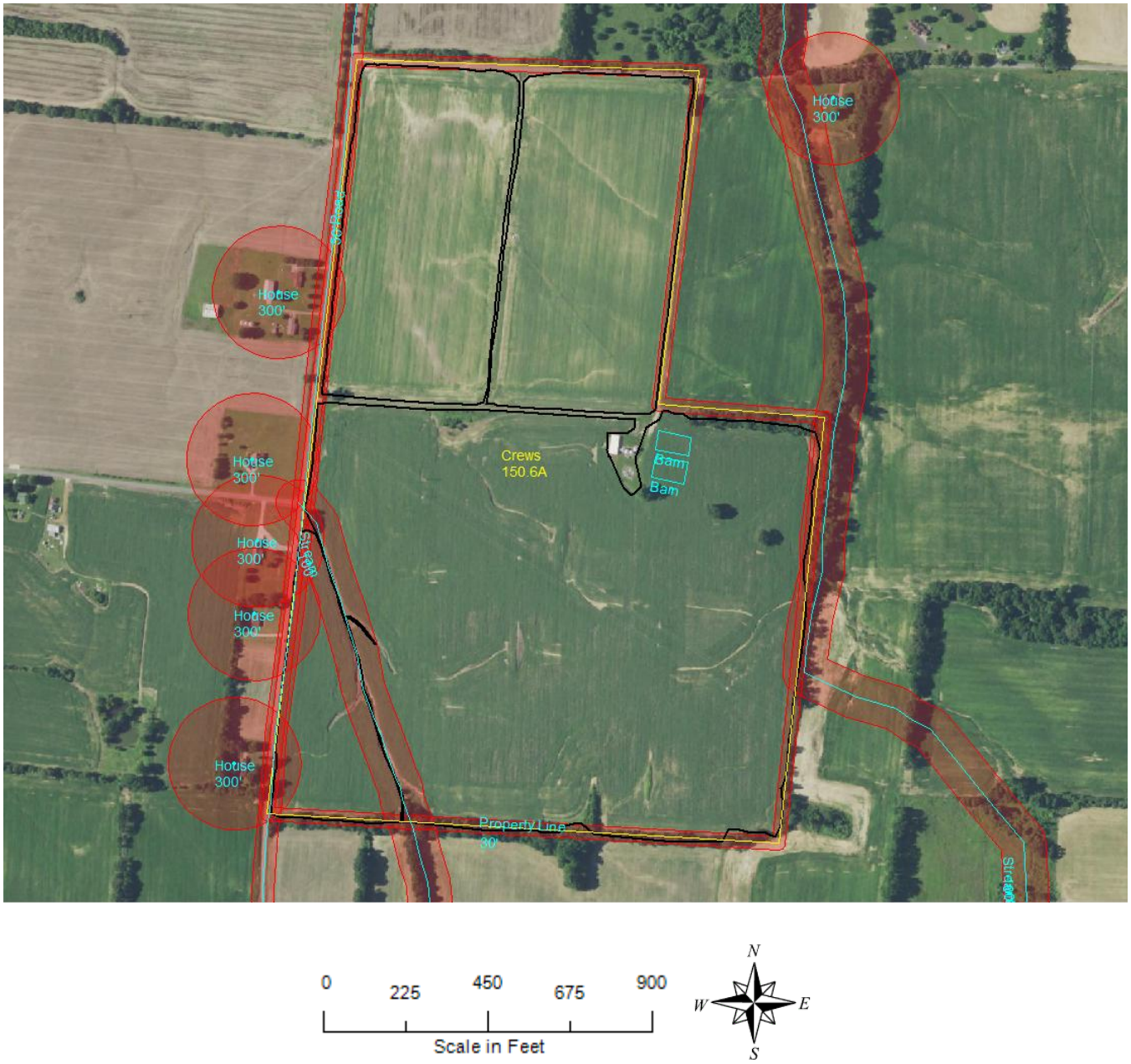

PropertyLine
30'
Barn
Barn
Barn
Barn
Pond
10g
Cypress Creel
57.3A
House
300'


0
225
450
675
900
Scale in Feet
N
W
E
S

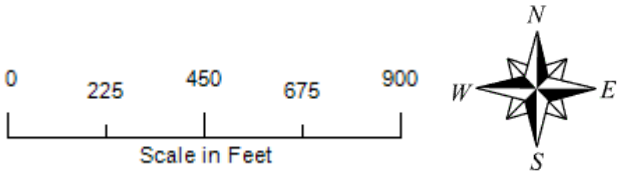

Property Line
30'
Barn
Barn
Barn
Barn
Cypress Creek
57.3A
House
300'
350
PIPELINE


0
225
450
675
900
Scale in Feet
N
W
E
S

New Site 2017




House
300'
House
300'
House
300'
House
300'
House
300'
House
300'
Crops
Bam
Bam
350
329
350
Property Line
30'


0
225
450
675
900
Scale in Feet
N
W
E
S

Obion County, Tennessee

Map Unit: Ca—Calloway silt loam

Component: Calloway (100%)

The Calloway component makes up 100 percent of the map unit. Slopes are 0 to 3 percent. This component is on loess hills on plains. The parent material consists of loess. Depth to a root restrictive layer inches , fragipan,. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 17 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map Unit: Fa—Falaya silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration

Component: Falaya (90%)

The Falaya component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on plains. The parent material consists of coarse-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Component: Waverly (5%)

Generated brief soil descriptions are created for major components. The Waverly soil is a minor component.

Component: Collins (5%)

Generated brief soil descriptions are created for major components. The Collins soil is a minor component.

Map Unit: GrB—Grenada silt loam, 2 to 5 percent slopes

Component: Grenada (100%)

The Grenada component makes up 100 percent of the map unit. Slopes are 2 to 5 percent. This component is on loess hills on plains. The parent material consists of loess. Depth to a root restrictive layer, fragipan, is 18 to 33 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 23 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map Unit: GrB2—Grenada silt loam, 2 to 5 percent slopes, eroded

Component: Grenada (100%)

The Grenada component makes up 100 percent of the map unit. Slopes are 2 to 5 percent. This component is on loess hills on plains. The parent material consists of loess. Depth to a root restrictive layer, fragipan, is 17 to 36 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during January, February, March,

April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map Unit: GrC2—Grenada silt loam, 5 to 8 percent slopes, eroded

Component: Grenada (100%)

The Grenada component makes up 100 percent of the map unit. Slopes are 5 to 8 percent. This component is on loess hills on plains. The parent material consists of loess. Depth to a root restrictive layer inches , fragipan,. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 16 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map Unit: W—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Weakley County, Tennessee

Map Unit: GrB2—Grenada silt loam, 2 to 5 percent slopes, eroded

Component: Grenada (100%)

The Grenada component makes up 100 percent of the map unit. Slopes are 2 to 5 percent. This component is on loess hills on plains. The parent material consists of loess. Depth to a root restrictive layer, fragipan, is 17 to 36 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map Unit: GrC3—Grenada silt loam, 5 to 8 percent slopes, severely eroded

Component: Grenada (100%)

The Grenada component makes up 100 percent of the map unit. Slopes are 5 to 8 percent. This component is on loess hills on plains. The parent material consists of loess. Depth to a root restrictive layer, fragipan, is 10 to 20 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 14 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

2.2. Crop and Pasture Conservation Practices -- Record of Decisions

Conservation Crop Rotation (328)

Grow crops in a recurring sequence in the same field. Develop crop rotation program for Corn - Soybeans. See Practice Standard 328.

Field(s)	Planned amount (Ac)	Month	Year	Amount Applied	Date
Benson Crop	166.6	6	2017		
Benson Berm	44.3	6	2017		
Clay	31.9	6	2017		
Crews	132.4	6	2017		
Cypress Creek	48.7	6	2017		
Duck Hole	19	6	2017		
GrandView	249.3	6	2017		
Hester	65.4	6	2017		
Jerrigan	260.4	6	2017		
Mawmaw	87.6	6	2017		
McCullough	38.7	6	2017		
Thurman	41	6	2017		
Winters	34.2	6	2017		
TOTAL	**1219.5**				

Nutrient Management (590)

Soil amendments, animal waste, and lime will be applied according to soil test recommendations. When applying animal waste, recommended buffer widths shall be observed. Refer to Practice Standard 590.

Ongoing: Use of rotation, application of manure and commercial fertilizer/ lime according to soil test results from a Tn accredited lab.

Manure needs to be tested each time an application occurs if manure test varies from this document, make adjustments to application rate.

Field(s)	Planned amount (Ac)	Month	Year	Amount Applied	Date
Benson Crop	166.6	6	2017		
Benson Berm	44.3	6	2017		
Clay	31.9	6	2017		
Crews	132.4	6	2017		
Cypress Creek	48.7	6	2017		
Duck Hole	19	6	2017		
GrandView	249.3	6	2017		
Hester	65.4	6	2017		
Jerrigan	260.4	6	2017		
Mawmaw	87.6	6	2017		
McCullough	38.7	6	2017		
Thurman	41	6	2017		
Winters	34.2	6	2017		
TOTAL	**1219.5**				

All NRCS conservation practices shall be installed, operated and maintained according to NRCS conservation practice standards and associated technical specifications.

2.3. Crop and Pasture Conservation Practices – Implementation Requirements

Sampling Farm Fields

Divide fields to be sampled into production areas (of 10 acres or less) based on uniform soil type, fertilization and management history. Sandy or eroded areas, and problem areas of obviously different plant growth responses should also be sampled separately -- provided the area is sufficiently large enough to be treated differently with lime or fertilizer.

From your local county Extension office, obtain a soil sample box for **each** production area, and submit a Soil and Media Test Information Sheet,* for each **ten** production areas.

For each production area that you have identified:

1. Collect a composite soil sample by moving through the area in a zig-zag pattern; sampling at a minimum of 20 locations. This sampling procedure should be random with respect to any existing cropping row. In continuous no-till production fields, be sure to vary distance from the row for each sub-sample collected. In continuous no-till fields or where fertilizer has been banded, increasing the number of sub-samples to 30 or 40 will increase precision of the results.

2. Move surface litter aside. Each sub-sample should be obtained by using a soil tube, trowel or spade. For determination of plant nutrients, take soil samples to a depth of 6 inches. For organic matter determination, sample to the depth of 2 inches.

3. Combine each sub-sample in a clean bucket as you move through the production area. Do not use a galvanized bucket if Zn is to be determined. Thoroughly mix the sub-samples into one composite sample. If the soil is exceptionally wet, you may have to let it air dry on a paper plate before it can be properly mixed (wet soil can also dramatically increase shipping costs and weaken shipping containers). DO NOT use heat to dry a soil sample as heat may change your results.

4. From this composite sample remove enough soil (about a cup) to fill a soil sample box. Adequately mark the box to identify the selected production area location represented by that soil sample and keep this record in a safe place for later referral.

5. For the PSNT soil test, sample to a depth of 12 inches when corn is 6 to 12 inches tall. Height should be measured from the ground to bottom of the whorl (4-6 fully mature leaves present).

6. For container media analysis, medium should be sampled before posting by removing several portions from the mix and blending thoroughly. For established plantings, select 8 to 10 pots that are representative of the medium used. Scrape away the top one-fourth inch of each pot including slow-release fertilizer pellets and discard. Mix samples being careful not to crush any remaining fertilizer pellets. Completely fill **two** soil sample boxes for container media analysis.

Send soil sample(s), Soil and Media Information Sheet(s), and appropriate fees to the Soil, Plant and Pest Center (see address and fee information on the Soil and Media Information Sheet). Fees can also be paid by credit card using the secure UT Institute of Agriculture eMarketplace site. Click here to pay online.

THE UNIVERSITY of TENNESSEE Extension
W093

Livestock Waste Management and Conservation

Procedures for Manure and Litter Sampling

(Class I & II – Large and Medium CAFOs)

Tennessee CAFO Factsheet #14

Kristy M. Hill, Extension Dairy Specialist
Animal Science Department

Nutrient composition of manure varies with a number of factors, including animal type, bedding, ration, storage and handling, environmental conditions, field application method, age of manure, timing of sampling and sampling technique. This variability makes book values (or averages) an unreliable source for determining application rates of nitrogen, phosphorus and potassium. Each livestock production operation and manure management system is unique, and an individual farm's manure analysis can vary from average values by 50 percent or more. Testing manure may better indicate how animal management and other factors actually affect nutrient contents and will allow for more accurate calculation of application rates.

The results of a manure analysis are only as reliable as the sample taken. A representative sample is needed to accurately reflect the nutrient content. However, obtaining a representative sample can be a challenge as manure nutrient content is not uniform within storage structures. Mixing and sampling strategies can insure that samples more accurately reflect the type of manure that will be applied.

When to Sample

The ideal time to sample manure is prior to application to ensure that results of the analysis are received in time to adjust nutrient application rates.

However, do not allow long periods of time to pass before application begins, because there can be storage and handling losses over time. Sampling several days to a week prior to application is best. However, a complication of the timing of the sampling is that semi-solid (or slurry) manure should be well agitated before sampling, and in many situations, such as contracting waste application to a third party, agitators or other necessary equipment are not available until application begins. In cases such as this, "pre-sampling" (dipping samples off the top of the storage structure for N and K concentrations) can be used to estimate application rates (See page 4 for more info on pre-sampling).

Building a "bank" of manure analysis over time can be quite useful in the future as long as animal management practices, feed rations or manure storage and handling methods do not drastically change from present methods. If samples do not vary greatly from year to year or are consistent during spring or fall applications, the "bank" averages will help estimate application rates if an analysis cannot be performed prior to application.

Safety Precautions

It is more dangerous and more difficult to sample from liquid storage facilities than dry-manure systems. Proper precautions should be taken to prevent

accidents, such as falling into the storage facility or being overcome by manure gases.

1. Have two people present at all times;
2. Never enter confined manure-storage spaces without appropriate safety gear, such as a self-contained breathing apparatus;
3. When agitating a storage pit below a building, be sure to provide adequate ventilation for both humans and animals; and
4. When agitating outdoor pits, monitor activities closely to prevent erosion of berms or destruction of pit liners.

Sample Preparations

1. Check with the laboratory performing the analysis, as most of these labs have plastic bottles available for liquid sample collection or sealable plastic bags for dry samples (freezer bags work well). Additionally, they may have specific sample collection procedures, including holding times, refrigeration and shipping requirements.
2. Do not use glass containers, as expansion of the gases in the sample can cause the container to break.
3. Never use galvanized containers for collection or mixing due to the risk of contamination from metals like zinc in the container.
4. When taking liquid samples from facilities spreading both effluent and solids, the manure should be agitated for two to four hours before taking the sample.
5. Liquid samples can be taken during agitation (after two to four hours have passed) because most agitation equipment is effective 75 to 100 feet away from the equipment.
6. Take multiple samples from the storage facility and mix them together thoroughly in a larger bucket to obtain a representative sample. For liquid or semi-solid samples, use a stirring rod to get the solids spinning in suspension and collect the representative sample while the liquid is still spinning.
7. When taking liquid samples, fill the plastic bottle three-fourths full and leave at least 1 inch of air space to allow for gas expansion.
8. When taking dry samples, squeeze all of the excess air from the sealable plastic bag to allow for gas expansion and place the first bag into a second sealable plastic bag to prevent leaks.
9. Label the plastic bags or bottles prior to sampling with your name, date and sample identification number. Use a waterproof pen.
10. After sampling, place the container(s) in the refrigerator or freezer (preferred) until mailed to the lab. Cooling the samples will reduce microbial activity, chemical reactions and reduce odors.
11. Ship samples early in the week (Monday–Wednesday) using an overnight service. Avoid holidays and weekends.

Sampling Semi-Solid and Liquid Manure from Storage Facilities

Manure with 10 to 20 percent solids is classified as semi-solid manure and can usually be handled as a liquid. Semi-solid manure usually requires the use of chopper pumps to provide thorough agitation before pumping. Liquid manure is manure with less than 10 percent solids and is handled with pumps, pipes, tank wagons or irrigation equipment (if less than 5 percent solids).

If all contents of the entire semi-solid or liquid storage facility will be applied, complete agitation (2-4 hours minimum) is required to accurately sample the manure because in liquid and semi-solid systems, settled solids can contain more than 90 percent of the phosphorus. However, if solids will be purposefully left on the bottom when the storage structure is pumped out, as is sometimes the case with lagoons, then complete agitation during sampling will generate artificially high nutrient values. In this case, agitation of the solids or sludge at the bottom of the lagoon is not needed for nutrient analysis, and premixing the surface liquid in the lagoon is not needed.

Methods of Sampling:

Several different methods may be used to sample liquid or semi-solid manure from storage facilities:

1. Use a plastic sampling cup with a 10- to 12-foot handle to obtain surface water samples (see Figure 1). Collect about a pint of sample from several locations (six to eight) around the perimeter of the storage unit about 6 feet from the bank and 12 inches below the surface. Avoid floating debris or scum. Pour each of the samples into a clean plastic bucket and mix well. Pour representative sample in plastic container for shipping. *(Chastain, 2003)*
2. Throw a small plastic bucket tied to a long rope out towards the middle of the storage unit while holding onto the rope. Begin pulling the bucket back to the bank as soon as it strikes the surface. Make sure the bucket is raised above the surface before it strikes the bank. Pour each sample into a larger plastic bucket, and repeat this procedure at four to six locations evenly spaced around the perimeter of the storage unit. Mix all samples well and pour representative sample into a plastic container for shipping. *(Chastain, 2003)*
3. Samples may also be taken using a probe or a tube. They can be constructed out of a 1½-inch diameter PVC pipe. Cut the PVC pipe a foot longer than the depth of the pit. Run a ¼-inch rod or string through the length of the pipe and attach a plug such as a rubber stopper or rubber ball (see Figure 2). The rod or the string must be longer than the pipe. If using a rod, bend the top over to prevent it from falling out of the pipe. The probe should be slowly inserted into the pit or lagoon with the stopper open, to the full depth of the pit. Pull the string or rod to close the bottom of the pipe and pull the probe out of the pit, being careful not to tip the pipe and dump the sample. Release the sample into a large plastic bucket and repeat the process at least three times around the pit. Mix all samples well and pour a representative sample into a plastic container for shipping. *(Rieck-Hinz, 2003)*

Figure 1.

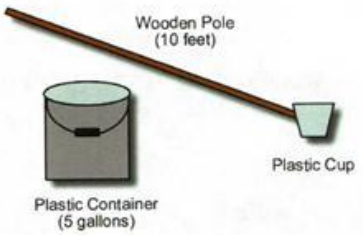
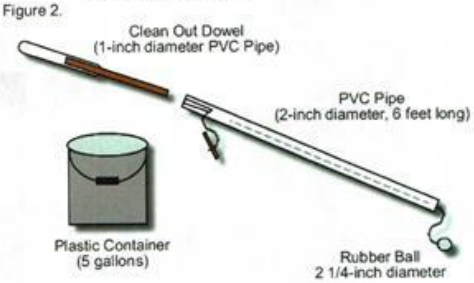


Figure 2.



Sampling Semi-Solid and Liquid Manure during Land Application with Tank Wagons

Settling begins as soon as agitation stops, so samples should be collected as soon as possible after the manure tank wagon is filled, unless the tanker has an agitator. Be sure the port or opening does not have a solids accumulation from prior loads. Collect samples in a plastic bucket from the loading or unloading port or the opening near the bottom of the tank. Stir the sample in the bucket to get the solids in suspension. Remove a ladle full while the liquid is still spinning and pour into the sample bottle. Repeat these steps until the sample bottle is three quarters full.

Sampling Liquid Manure during Land Application with Irrigation Systems

Place plastic buckets randomly at different distances from the sprinkler head in the field to collect the liquid manure that is being applied by an irrigation system. Immediately after manure has been applied, collect manure from the buckets and combine them into one container. Stir the collective sample, remove a ladle full while the liquid is still spinning and pour into the sample bottle.

Pre-Sampling Nitrogen and Potassium from Liquid Manure Systems

If liquid systems cannot be agitated prior to application and a sample is needed to estimate application rates, manure samples can be dipped off the top of the stored liquid manure to analyze for N and K concentrations. Research indicates that the top-dipped liquid represents approximately 90 percent of the N concentration measured in mixed, field-collected samples. Multiply the results of the N concentration from top-dipped samples by 1.1 for a better estimate of N. Dipping a sample from the surface of a liquid storage pit does NOT provide a good estimate of P concentrations in the pit, so use of the P analysis from top-dipped samples is not recommended. Therefore, if application is limited to a P-based application rate, pre-sampling is not recommended. Producers who take these types of samples should remember to take additional samples during application to calculate the actual amount of nutrients applied and use to adjust commercial fertilizer application. *(Rieck-Hinz, 2003)*

Sampling Dry or Solid Manure

Solid manure systems will include fecal matter, urine, bedding and feed. They can vary from one location to another within the same production operation and from season to season. Sampling of dry or solid manure is best done in the field during application, because it will take into account losses that occur during handling and application. Manure is better mixed during application than during storage. Results will not be available in time to adjust application rates; however, sampling will allow producers to adjust any future commercial fertilizer rates and manure application in subsequent years. If a sample must be taken prior to application to estimate application rates, be sure to take samples from various places in the manure pile, stack or litter to obtain a representative sample for analysis. It may even be beneficial to take samples several times during the year because of the variation in bedding content.

Methods of Sampling:

As with liquid or semi-solid systems, many different methods can be used to obtain a representative sample. The method chosen will depend on the type of solid system used on the farm. Sub-samples can be taken with a shovel, pitchfork or soil probe. Regardless of the method of sampling, a composite

sample will need to be taken from all of the samples to ensure it represents the entire manure used for application. To obtain a composite sample, place all sub-samples (the more sub-samples, the more accurate the results) in a pile and mix with a shovel by continuously scooping from the outside of the pile to the center of the pile until well mixed. Fill a one-gallon plastic Zip-lock® freezer bag (or the bag provided by the laboratory) one-half full with the composite sample by turning the bag inside out over one hand. With the covered hand, grab representative handfuls of manure and turn the freezer bag right side out over the sample with the free hand. Squeeze out the excess air, close, seal and store sample in another plastic sealable bag in the freezer until mailed. *(Rieck-Hinz, 2003)*

1. *Sampling poultry litter in-house:* Collect 10 to 15 sub-samples from throughout the house to the depth the litter will be removed. Cake litter samples should be taken at the depth of cake removal. The number of samples taken near feeders or waterers should be proportionate to their space occupied in the whole house. *(LPES)*
2. *Sampling stockpiled manure, litter or compost:* Ideally, stockpiled material should be stored under cover on an impervious surface. The exterior of uncovered waste may not accurately represent the majority of the material because rainfall moves water-soluble nutrients down into the pile. If an uncovered stockpile is used over an extended period of time, it should be sampled before each application. Take 10 sub-samples from different locations around the pile at least 18 inches below the surface. *(LPES)*
3. *Sampling from a bedded pack:* It is recommended that samples from a bedded pack be taken during loading. Take at least five sub-samples while loading several spreader loads. *(Peters, 2003)*
4. *Sampling daily hauls:* Place a five-gallon pail under the barn cleaner 4 to 5 times while loading a spreader. *(Peters, 2003)*
5. *Sampling scrape-and-haul feedlots:* Facilities where manure accumulates on paved feedlots and is scraped and hauled to the field daily or several times during the week are referred to as scrape-and-haul feedlots. Sub-samples can be collected by scraping a shovel across approximately 25 feet of the paved feedlot. This process should be repeated 10 or more times, taking care to sample in a direction that slices through the variations of moisture, bedding, depth, age, etc. Avoid excessively wet areas and areas with large amounts of hay or feed. Several composite samples may be needed for this type of facility. *(Rieck-Hinz, 2003)*
6. *Sampling during spreading or land application:* Spread a sheet of plastic or a tarp in the field and drive the tractor and spreader over the top of the plastic to catch the manure from one pass of the spreader. Samples should be collected to represent the first, middle and last part of the storage facility or loads applied and should be correlated as to which loads are applied on each field to track changes in nutrient content throughout the storage facility. *(Rieck-Hinz, 2003)*

References

Peters, John. (ed.) 2003. **Recommended Methods of Manure Analysis**. University of Wisconsin Extension. A3769.

Rieck-Hinz, A., J. Lorimor, T. Richard, and K. Kohl. 2003. **How to Sample Manure for Nutrient Analysis**. Iowa State University Extension. PM1558.

Chastain, J.P. 2003. **Manure Sampling Procedures.** South Carolina Confined Animal Manure Managers Certification Program. Clemson Extension.

Livestock and Poultry Environmental Stewardship (LPES) Curriculum. Manure Sampling. Module D, Land Application and Nutrient Management.

2.4. Predicted Soil Erosion

Average water, wind, irrigation, gully and ephemeral erosion estimates

Field	Predominant Soil Type	T Factor (t/ac/yr)	Slope (%)	Water (Sheet and Rill) (t/ac/yr)	Wind (t/ac/yr)	Irrigation Erosion Controlled (y/n)	Gully Erosion Controlled (y/n)	Ephemeral Erosion Controlled (y/n)
Benson Crop	LoB2 (Loring SIL)	4	3.5	1.4				
Benson Berm	LoB2 (Loring SIL)	4	3.5	0.0				
Clay	Co (Collins SIL)	5	1.0	1.1				
Crews	LoC3 (Loring SIL)	2	6.5	5.3				
Cypress Creek	GrB (Grenada SIL)	4	3.5	1.5				
Duck Hole	Ws (Waverly SIL)	5	1.0	0.7				
GrandView	Ca (Calloway SIL)	3	1.5	1.6				
Hester	Fb (Falaya SIL)	5	1.0	0.8				
Jernigan	Fa (Falaya SIL)	5	1.0	0.5				
Mammaw	Ru (Routon SIL)	5	1.0	0.6				
McCullough	Ru (Routon SIL)	5	1.0	0.8				
Thurman	Fb (Falaya SIL)	5	1.0	0.9				
Winters	GrC3 (Grenada SIL)	2	6.5	2.2				

Crop period sheet and rill erosion estimates

Field	Crop Year	Primary Crop	Starting Date (mm/dd/yyyy)	Ending Date (mm/dd/yyyy)	Crop Period Soil Loss (t/ac)
Benson Crop	2017	Soybean	9/16/2016	10/15/2017	0.7
	2018	Corn grain	10/16/2017	9/15/2018	1.4
	2019	Soybean	9/16/2018	10/15/2019	1.3
	2020	Corn grain	10/16/2019	9/15/2020	2.0
	2021	Soybean	9/16/2020	10/15/2021	1.4
Benson Berm	2017	Bermuda common hay	9/2/2016	9/1/2017	0.0
	2018	Bermuda common hay	9/2/2017	9/1/2018	0.1
	2019	Bermuda common hay	9/2/2018	9/1/2019	0.0
	2020	Bermuda common hay	9/2/2019	9/1/2020	0.0

Field	Crop Year	Primary Crop	Starting Date (mm/dd/yyyy)	Ending Date (mm/dd/yyyy)	Crop Period Soil Loss (t/ac)
	2021	Bermuda common hay	9/2/2020	9/1/2021	0.0
Clay	2017	Corn grain	10/16/2016	9/15/2017	2.3
	2018	Soybean	9/16/2017	10/15/2018	0.9
	2019	Corn grain	10/16/2018	9/15/2019	0.9
	2020	Soybean	9/16/2019	10/15/2020	0.7
	2021	Corn grain	10/16/2020	9/15/2021	0.9
Crews	2017	Corn grain	9/2/2016	9/15/2017	5.8
	2018	Corn grain	9/16/2017	9/15/2018	4.8
	2019	Corn grain	9/16/2018	9/15/2019	6.4
	2020	Corn grain	9/16/2019	9/15/2020	4.2
	2021	Corn grain	9/16/2020	9/1/2021	4.8
Cypress Creek	2017	Soybean	9/16/2016	10/15/2017	0.8
	2018	Corn grain	10/16/2017	9/15/2018	1.5
	2019	Soybean	9/16/2018	10/15/2019	1.4
	2020	Corn grain	10/16/2019	9/15/2020	2.1
	2021	Soybean	9/16/2020	10/15/2021	1.7
Duck Hole	2017	Soybean	9/16/2016	10/15/2017	0.4
	2018	Corn grain	10/16/2017	9/15/2018	0.8
	2019	Soybean	9/16/2018	10/15/2019	0.6
	2020	Corn grain	10/16/2019	9/15/2020	0.8
	2021	Soybean	9/16/2020	10/15/2021	0.7
GrandView	2017	Corn grain	9/2/2016	9/15/2017	1.4
	2018	Corn grain	9/16/2017	9/15/2018	1.2
	2019	Corn grain	9/16/2018	9/15/2019	1.8
	2020	Corn grain	9/16/2019	9/15/2020	1.7
	2021	Corn grain	9/16/2020	9/1/2021	1.7
Hester	2017	Corn grain	10/16/2016	9/15/2017	1.5
	2018	Soybean	9/16/2017	10/15/2018	0.5
	2019	Corn grain	10/16/2018	9/15/2019	0.6
	2020	Soybean	9/16/2019	10/15/2020	0.6

Field	Crop Year	Primary Crop	Starting Date (mm/dd/yyyy)	Ending Date (mm/dd/yyyy)	Crop Period Soil Loss (t/ac)
	2021	Corn grain	10/16/2020	9/15/2021	0.8
Jernigan	2017	Soybean	9/16/2016	10/15/2017	0.3
	2018	Corn grain	10/16/2017	9/15/2018	0.5
	2019	Soybean	9/16/2018	10/15/2019	0.5
	2020	Corn grain	10/16/2019	9/15/2020	0.7
	2021	Soybean	9/16/2020	10/15/2021	0.6
Mammaw	2017	Soybean	9/16/2016	10/15/2017	0.4
	2018	Corn grain	10/16/2017	9/15/2018	0.6
	2019	Soybean	9/16/2018	10/15/2019	0.6
	2020	Corn grain	10/16/2019	9/15/2020	0.8
	2021	Soybean	9/16/2020	10/15/2021	0.6
McCullough	2017	Corn grain	10/16/2016	9/15/2017	1.4
	2018	Soybean	9/16/2017	10/15/2018	0.5
	2019	Corn grain	10/16/2018	9/15/2019	0.6
	2020	Soybean	9/16/2019	10/15/2020	0.6
	2021	Corn grain	10/16/2020	9/15/2021	0.8
Thurman	2017	Corn grain	10/16/2016	9/15/2017	1.6
	2018	Soybean	9/16/2017	10/15/2018	0.5
	2019	Corn grain	10/16/2018	9/15/2019	0.7
	2020	Soybean	9/16/2019	10/15/2020	0.6
	2021	Corn grain	10/16/2020	9/15/2021	0.8
Winters	2017	Soybean	9/16/2016	10/15/2017	1.1
	2018	Corn grain	10/16/2017	9/15/2018	2.2
	2019	Soybean	9/16/2018	10/15/2019	2.0
	2020	Corn grain	10/16/2019	9/15/2020	3.0
	2021	Soybean	9/16/2020	10/15/2021	2.3

Section 3. Nutrient Management Plan (590)

3.1. Nitrogen and Phosphorus Risk Analyses

Tennessee Phosphorus Index

Field	Crop Year	Site Total	Management Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
Benson Crop	2017	12	3	12	36	Low
Benson Crop	2018	12	18	12	216	Medium
Benson Crop	2019	12	3	12	36	Low
Benson Crop	2020	12	21	12	252	Medium
Benson Crop	2021	12	3	12	36	Low
Benson Berm	2017	11	3	11	33	Low
Benson Berm	2018	11	19	11	209	Medium
Benson Berm	2019	11	3	11	33	Low
Benson Berm	2020	11	19	11	209	Medium
Benson Berm	2021	11	3	11	33	Low
Clay	2017	11	19	22	209	Medium
Clay	2018	11	4	22	44	Low
Clay	2019	11	19	22	209	Medium
Clay	2020	11	4	22	44	Low
Clay	2021	11	20	22	220	Medium
Crews	2017	17	19	34	323	High
Crews	2018	14	4	28	56	Low
Crews	2019	17	22	34	374	High
Crews	2020	14	4	28	56	Low
Crews	2021	14	20	28	280	High
Cypress Creek	2017	12	4	24	48	Low
Cypress Creek	2018	12	34	24	408	Very high
Cypress Creek	2019	12	4	24	48	Low
Cypress Creek	2020	12	19	24	228	Medium
Cypress Creek	2021	12	4	24	48	Low
Duck Hole	2017	11	4	22	44	Low

Field	Crop Year	Site Total	Management Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
Duck Hole	2018	11	22	22	242	Medium
Duck Hole	2019	11	4	22	44	Low
Duck Hole	2020	11	19	22	209	Medium
Duck Hole	2021	11	4	22	44	Low
GrandView	2017	12	14	24	168	Medium
GrandView	2018	12	4	24	48	Low
GrandView	2019	12	20	24	240	Medium
GrandView	2020	12	4	24	48	Low
GrandView	2021	12	22	24	264	Medium
Hester	2017	11	4	22	44	Low
Hester	2018	11	4	22	44	Low
Hester	2019	11	19	22	209	Medium
Hester	2020	11	4	22	44	Low
Hester	2021	11	22	22	242	Medium
Jernigan	2017	11	4	22	44	Low
Jernigan	2018	11	19	22	209	Medium
Jernigan	2019	11	4	22	44	Low
Jernigan	2020	11	19	22	209	Medium
Jernigan	2021	11	4	22	44	Low
Mammaw	2017	11	4	22	44	Low
Mammaw	2018	11	19	22	209	Medium
Mammaw	2019	11	4	22	44	Low
Mammaw	2020	11	19	22	209	Medium
Mammaw	2021	11	4	22	44	Low
McCullough	2017	11	4	22	44	Low
McCullough	2018	11	4	22	44	Low
McCullough	2019	11	19	22	209	Medium
McCullough	2020	11	4	22	44	Low
McCullough	2021	11	20	22	220	Medium
Thurman	2017	11	4	22	44	Low
Thurman	2018	11	4	22	44	Low

Field	Crop Year	Site Total	Management Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
Thurman	2019	11	19	22	209	Medium
Thurman	2020	11	4	22	44	Low
Thurman	2021	11	20	22	220	Medium
Winters	2017	14	4	28	56	Low
Winters	2018	12	19	24	228	Medium
Winters	2019	12	4	24	48	Low
Winters	2020	14	19	28	266	Medium
Winters	2021	14	4	28	56	Low

3.2. Manure Application Setback Distances

Setback Requirements: Class I CAFO

Feature	Setback Criteria	Setback Distance (Feet)
Streams	Applied upgradient, no permanent or insufficient vegetated setback	100
Streams	New operation, near high quality stream	60
Surface waters	Applied upgradient, no permanent or insufficient vegetated setback	100
Open tile line inlet structures	Applied upgradient, no permanent or insufficient vegetated setback	100
Sinkholes	Applied upgradient, no permanent or insufficient vegetated setback	100
Agricultural well heads	Applied upgradient, no permanent or insufficient vegetated setback	100
Other conduits to surface waters	Applied upgradient, no permanent or insufficient vegetated setback	100
Potable well, public or private	Application down-gradient of feature	150
Potable well, public or private	Application upgradient of feature	300

Source: TN DEQ Rule 1200-4-5-.14(17)(d) (http://www.state.tn.us/sos/rules/1200/1200-04/1200-04-05.pdf)

Setback Requirements: NRCS Standard

Feature	Setback Criteria	Setback Distance (Feet)
Well	Application upgradient of feature	300
Well	Application down-gradient of feature	150
Waterbody	Predominant slope <5% with good vegetation	30
Waterbody	Poor vegetation	100
Public road	All applications	50
Dwelling (other than producer)	All applications	300
Public use area	All applications	300
Property line	Application upgradient of feature	30

Source: Nutrient Management Standard 590 (http://efotg.nrcs.usda.gov/references/public/TN/Nutrient_Management_(590)_Standard.doc)

3.3. Soil Test Data

Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Units	Soil pH	Buffer pH	CEC (meq/ 100g)
Benson Crop	2015		Mehlich-3 ICP	60	168			lbs/ac			
Benson Berm	2015		Mehlich-3 ICP	55	182			lbs/ac			
Clay	2017		Mehlich-3 ICP	183	190			lbs/ac			
Crews	2017		Mehlich-3 ICP	64	164			lbs/ac			
Cypress Creek	2015		Mehlich-3 ICP	151	238			lbs/ac			
Duck Hole	2015		Mehlich-3 ICP	101	152			lbs/ac			
GrandView	2017		Mehlich-3 ICP	151	248			lbs/ac			
Hester	2017		Mehlich-3 ICP	87	226			lbs/ac			
Jernigan	2017		Mehlich-3 ICP	78	204			lbs/ac			
Mammaw	2015		Mehlich-3 ICP	69	112			lbs/ac			
McCullough	2017		Mehlich-3 ICP	96	200			lbs/ac			
Thurman	2015		Mehlich-3 ICP	137	200			lbs/ac			
Winters	2017		Mehlich-3 ICP	87	310			lbs/ac			

3.4. Manure Nutrient Analyses

Manure Source	Dry Matter (%)	Total N	NH_4-N	Total P_2O_5	Total K_2O	Avail. P_2O_5	Avail. K_2O	Units	Analysis Source and Date	Alum Treatment Rate (lbs/1000 sq.ft.)
New Barn 1		37.1	30.4	28.4	23.9	28.4	23.9	lbs/1000 gal	MMP Estimate	
New Barn 2		37.1	30.4	28.4	23.9	28.4	23.9	lbs/1000 gal	MMP Estimate	
Old Barn 1		37.1	30.4	28.4	23.9	28.4	23.9	lbs/1000 gal	MMP Estimate	
Old Barn 2		37.1	30.4	28.4	23.9	28.4	23.9	lbs/1000 gal	MMP Estimate	
North Lagoon		0.1	0.1	1.7	3.5	1.7	3.5	lbs/1000 gal	MMP Estimate	
South Lagoon		0.1	0.1	0.9	2.8	0.9	2.8	lbs/1000 gal	MMP Estimate	
Barn 5 (2017)		37.1	30.4	28.4	23.9	28.4	23.9	lbs/1000 gal	MMP Estimate	
Barn 6 (2017)		37.1	30.4	28.4	23.9	28.4	23.9	lbs/1000 gal	MMP Estimate	

a. Entered analysis may be the average of several individual analyses.
b. Tennessee assumes that 100% of manure phosphorus and 100% of manure potassium is crop available. First-year per-acre nitrogen availability for individual manure applications is given in the Planned Nutrient Applications table. For more information about nitrogen availability in Tennessee, see "Manure Application Management," Tables 3 and 4, Tennessee Extension, PB1510, 2/94 (http://wastemgmt.ag.utk.edu/Pubs/PB1510.pdf).

3.5. Planned Crops and Fertilizer Recommendations

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P_2O_5 Rec (lbs/ac)	K_2O Rec (lbs/ac)	N Removed (lbs/ac)	P_2O_5 Removed (lbs/ac)	K_2O Removed (lbs/ac)	Custom Fert. Rec. Source
Benson Crop	2017	Small grain[a]	80.0 bu	75	40	20	104	40	28	
Benson Crop	2017	Soybean	40.0 bu	0	20	40	160	32	56	
Benson Crop	2018	Corn grain	170.0 bu	160	70	70	128	75	49	
Benson Crop	2019	Small grain[a]	80.0 bu	90	40	20	104	40	28	
Benson Crop	2019	Soybean	40.0 bu	0	20	40	160	32	56	
Benson Crop	2020	Corn grain	170.0 bu	160	70	70	128	75	49	
Benson Crop	2021	Small grain[a]	80.0 bu	90	40	20	104	40	28	
Benson Crop	2021	Soybean	40.0 bu	0	20	40	160	32	56	
Benson Berm	2017	Bermuda common hay	6.0 tons	300	80	60	276	72	300	
Benson Berm	2018	Bermuda common hay	6.0 tons	300	80	60	276	72	300	
Benson Berm	2019	Bermuda common hay	6.0 tons	300	80	60	276	72	300	
Benson Berm	2020	Bermuda common hay	6.0 tons	300	80	60	276	72	300	
Benson Berm	2021	Bermuda common hay	6.0 tons	300	80	60	276	72	300	
Clay	2017	Corn grain	170.0 bu	160	0	70	128	75	49	
Clay	2018	Small grain[a]	80.0 bu	90	0	20	104	40	28	
Clay	2018	Soybean	40.0 bu	0	0	40	160	32	56	
Clay	2019	Corn grain	170.0 bu	160	0	70	128	75	49	
Clay	2020	Small grain[a]	80.0 bu	90	0	20	104	40	28	
Clay	2020	Soybean	40.0 bu	0	0	40	160	32	56	
Clay	2021	Corn grain	170.0 bu	160	0	70	128	75	49	
Crews	2017	Corn grain	170.0 bu	180	0	70	128	75	49	
Crews	2018	Corn grain	170.0 bu	180	0	70	128	75	49	
Crews	2019	Corn grain	170.0 bu	180	0	70	128	75	49	
Crews	2020	Corn grain	170.0 bu	180	0	70	128	75	49	
Crews	2021	Corn grain	170.0 bu	180	0	70	128	75	49	
Cypress Creek	2017	Small grain[a]	80.0 bu	75	0	0	104	40	28	
Cypress Creek	2017	Soybean	40.0 bu	0	0	0	160	32	56	
Cypress Creek	2018	Corn grain	170.0 bu	160	0	0	128	75	49	
Cypress Creek	2019	Small grain[a]	80.0 bu	90	0	0	104	40	28	

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P_2O_5 Rec (lbs/ac)	K_2O Rec (lbs/ac)	N Removed (lbs/ac)	P_2O_5 Removed (lbs/ac)	K_2O Removed (lbs/ac)	Custom Fert. Rec. Source
Cypress Creek	2019	Soybean	40.0 bu	0	0	0	160	32	56	
Cypress Creek	2020	Corn grain	170.0 bu	160	0	0	128	75	49	
Cypress Creek	2021	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Cypress Creek	2021	Soybean	40.0 bu	0	0	0	160	32	56	
Duck Hole	2017	Small grain[a]	bu	75	0	20				
Duck Hole	2017	Soybean	40.0 bu	0	0	40	160	32	56	
Duck Hole	2018	Corn grain	170.0 bu	160	0	70	128	75	49	
Duck Hole	2019	Small grain[a]	80.0 bu	90	0	20	104	40	28	
Duck Hole	2019	Soybean	40.0 bu	0	0	40	160	32	56	
Duck Hole	2020	Corn grain	170.0 bu	160	0	70	128	75	49	
Duck Hole	2021	Small grain[a]	80.0 bu	90	0	20	104	40	28	
Duck Hole	2021	Soybean	40.0 bu	0	0	40	160	32	56	
GrandView	2017	Corn grain	170.0 bu	180	0	0	128	75	49	
GrandView	2018	Corn grain	170.0 bu	180	0	0	128	75	49	
GrandView	2019	Corn grain	170.0 bu	180	0	0	128	75	49	
GrandView	2020	Corn grain	170.0 bu	180	0	0	128	75	49	
GrandView	2021	Corn grain	170.0 bu	180	0	0	128	75	49	
Hester	2017	Corn grain	170.0 bu	160	0	0	128	75	49	
Hester	2018	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Hester	2018	Soybean	40.0 bu	0	0	0	160	32	56	
Hester	2019	Corn grain	170.0 bu	160	0	0	128	75	49	
Hester	2020	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Hester	2020	Soybean	40.0 bu	0	0	0	160	32	56	
Hester	2021	Corn grain	170.0 bu	160	0	0	128	75	49	
Jernigan	2017	Small grain[a]	80.0 bu	75	0	0	104	40	28	
Jernigan	2017	Soybean	40.0 bu	0	0	0	160	32	56	
Jernigan	2018	Corn grain	170.0 bu	160	0	0	128	75	49	
Jernigan	2019	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Jernigan	2019	Soybean	40.0 bu	0	0	0	160	32	56	
Jernigan	2020	Corn grain	170.0 bu	160	0	0	128	75	49	

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P_2O_5 Rec (lbs/ac)	K_2O Rec (lbs/ac)	N Removed (lbs/ac)	P_2O_5 Removed (lbs/ac)	K_2O Removed (lbs/ac)	Custom Fert. Rec. Source
Jernigan	2021	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Jernigan	2021	Soybean	40.0 bu	0	0	0	160	32	56	
Mammaw	2017	Small grain[a]	80.0 bu	75	0	40	104	40	28	
Mammaw	2017	Soybean	40.0 bu	0	0	80	160	32	56	
Mammaw	2018	Corn grain	170.0 bu	160	0	140	128	75	49	
Mammaw	2019	Small grain[a]	80.0 bu	90	0	40	104	40	28	
Mammaw	2019	Soybean	40.0 bu	0	0	80	160	32	56	
Mammaw	2020	Corn grain	170.0 bu	160	0	140	128	75	49	
Mammaw	2021	Small grain[a]	80.0 bu	90	0	40	104	40	28	
Mammaw	2021	Soybean	40.0 bu	0	0	80	160	32	56	
McCullough	2017	Corn grain	170.0 bu	160	0	70	128	75	49	
McCullough	2018	Small grain[a]	80.0 bu	90	0	20	104	40	28	
McCullough	2018	Soybean	40.0 bu	0	0	40	160	32	56	
McCullough	2019	Corn grain	170.0 bu	160	0	70	128	75	49	
McCullough	2020	Small grain[a]	80.0 bu	90	0	20	104	40	28	
McCullough	2020	Soybean	40.0 bu	0	0	40	160	32	56	
McCullough	2021	Corn grain	170.0 bu	160	0	70	128	75	49	
Thurman	2017	Corn grain	170.0 bu	160	0	70	128	75	49	
Thurman	2018	Small grain[a]	80.0 bu	90	0	20	104	40	28	
Thurman	2018	Soybean	40.0 bu	0	0	40	160	32	56	
Thurman	2019	Corn grain	170.0 bu	160	0	70	128	75	49	
Thurman	2020	Small grain[a]	80.0 bu	90	0	20	104	40	28	
Thurman	2020	Soybean	40.0 bu	0	0	40	160	32	56	
Thurman	2021	Corn grain	170.0 bu	160	0	70	128	75	49	
Winters	2017	Small grain[a]	80.0 bu	75	0	0	104	40	28	
Winters	2017	Soybean	40.0 bu	0	0	0	160	32	56	
Winters	2018	Corn grain	170.0 bu	160	0	0	128	75	49	
Winters	2019	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Winters	2019	Soybean	40.0 bu	0	0	0	160	32	56	
Winters	2020	Corn grain	170.0 bu	160	0	0	128	75	49	

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P_2O_5 Rec (lbs/ac)	K_2O Rec (lbs/ac)	N Removed (lbs/ac)	P_2O_5 Removed (lbs/ac)	K_2O Removed (lbs/ac)	Custom Fert. Rec. Source
Winters	2021	Small grain[a]	80.0 bu	90	0	0	104	40	28	
Winters	2021	Soybean	40.0 bu	0	0	0	160	32	56	

a. Unharvested cover crop or first crop in double-crop system.
b. Custom fertilizer recommendation.

3.6. Planned Nutrient Applications (Manure-spreadable Area)

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Benson Crop	Apr 2018	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	144.4 loads	866,400 gal	166.6	135	148	124
Benson Crop	May 2018	Corn grain	32-0-0	Inject	Supp. N	7 gal		1,166 gal	166.6	25	0	0
Benson Crop	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal		3,998 gal	166.6	85	0	0
Benson Crop	Nov 2019	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,200 gal	144.4 loads	866,400 gal	166.6	135	148	124
Benson Crop	May 2020	Corn grain	32-0-0	Inject	Supp. N	7 gal		1,166 gal	166.6	25	0	0
Benson Crop	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal		3,998 gal	166.6	85	0	0
Benson Berm	May 2017	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	652 lbs		28,884 lbs	44.3	300	0	0
Benson Berm	Apr 2018	Bermuda common hay	Barn 6 (2017)	Injector 6000	2-yr P	5,700 gal	42.1 loads	252,600 gal	44.3	148	162	136
Benson Berm	May 2018	Bermuda common hay	46-0-0	Surface broadcast	Supp. N	330 lbs		14,619 lbs	44.3	152	0	0
Benson Berm	May 2019	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	641 lbs		28,396 lbs	44.3	295	0	0
Benson Berm	Apr 2020	Bermuda common hay	Barn 5 (2017)	Injector 6000	2-yr P	5,700 gal	3.7 loads	22,200 gal	3.9	148	162	136
Benson Berm	Apr 2020	Bermuda common hay	Old Barn 2	Injector 6000	2-yr P	5,700 gal	31.9 loads	191,400 gal	33.6	148	162	136
Benson Berm	Apr 2020	Bermuda common hay	Old Barn 1	Injector 6000	2-yr P	5,700 gal	6.6 loads	39,600 gal	6.9	148	162	136
Benson Berm	May 2020	Bermuda common hay	46-0-0	Surface broadcast	Supp. N	326 lbs		14,442 lbs	44.3	150	0	0
Benson Berm	May 2021	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	641 lbs		28,396 lbs	44.3	295	0	0
Benson Berm	Oct 2021	Bermuda common hay	Old Barn 2	Injector 6000	2-yr P	5,700 gal	19.1 loads	114,600 gal	20.1	148	162	136
Benson Berm	Oct 2021	Bermuda common hay	Old Barn 1	Injector 6000	2-yr P	5,700 gal	23.1 loads	138,600 gal	24.3	148	162	136
Clay	Apr 2017	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	27.7 loads	166,200 gal	32.0	135	148	124
Clay	May 2017	Corn grain	32-0-0	Inject	Supp. N	7 gal		223 gal	31.9	25	0	0
Clay	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	24 gal		766 gal	31.9	85	0	0
Clay	Apr 2019	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	27.7 loads	166,200 gal	32.0	135	148	124
Clay	May 2019	Corn grain	32-0-0	Inject	Supp. N	7 gal		223 gal	31.9	25	0	0
Clay	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal		766 gal	31.9	85	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Clay	Mar 2021	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,200 gal	27.7 loads	166,200 gal	32.0	135	148	124
Clay	May 2021	Corn grain	32-0-0	Inject	Supp. N	7 gal		223 gal	31.9	25	0	0
Clay	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal		766 gal	31.9	85	0	0
Crews	Apr 2017	Corn grain	New Barn 2	Injector 6000	2-yr P	5,300 gal	36.4 loads	218,400 gal	41.2	138	151	127
Crews	Apr 2017	Corn grain	New Barn 1	Injector 6000	2-yr P	5,300 gal	80.6 loads	483,600 gal	91.2	138	151	127
Crews	May 2017	Corn grain	32-0-0	Inject	Supp. N	12 gal		1,589 gal	132.4	42	0	0
Crews	May 2018	Corn grain	32-0-0	Inject	1-yr N	50 gal		6,620 gal	132.4	177	0	0
Crews	Oct 2018	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,300 gal	6 loads	36,000 gal	6.8	138	151	127
Crews	Oct 2018	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,300 gal	111 loads	666,000 gal	125.7	138	151	127
Crews	May 2019	Corn grain	32-0-0	Inject	Supp. N	12 gal		1,589 gal	132.4	42	0	0
Crews	May 2020	Corn grain	32-0-0	Inject	1-yr N	50 gal		6,620 gal	132.4	177	0	0
Crews	Mar 2021	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,300 gal	117 loads	702,000 gal	132.5	138	151	127
Crews	May 2021	Corn grain	32-0-0	Inject	Supp. N	12 gal		1,589 gal	132.4	42	0	0
Cypress Creek	Apr 2018	Corn grain	New Barn 2	Injector 6000	2-yr P	5,200 gal	5.7 loads	34,200 gal	6.6	135	148	124
Cypress Creek	Apr 2018	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,200 gal	42.2 loads	253,200 gal	48.7	135	148	124
Cypress Creek	Apr 2018	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,200 gal	36.5 loads	219,000 gal	42.1	135	148	124
Cypress Creek	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	23 gal		1,120 gal	48.7	81	0	0
Cypress Creek	Apr 2020	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,200 gal	42.3 loads	253,800 gal	48.8	135	148	124
Cypress Creek	May 2020	Corn grain	32-0-0	Inject	Supp. N	6 gal		292 gal	48.7	21	0	0
Cypress Creek	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal		1,169 gal	48.7	85	0	0
Duck Hole	Apr 2018	Corn grain	New Barn 1	Injector 6000	2-yr P	6,200 gal	19.7 loads	118,200 gal	19.1	161	176	148
Duck Hole	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal		456 gal	19.0	85	0	0
Duck Hole	Apr 2020	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	16.5 loads	99,000 gal	19.0	135	148	124
Duck Hole	May 2020	Corn grain	32-0-0	Inject	Supp. N	7 gal		133 gal	19.0	25	0	0
Duck Hole	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal		456 gal	19.0	85	0	0
GrandView	Apr 2017	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,300 gal	25 loads	150,000 gal	28.3	138	151	127

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
GrandView	Apr 2017	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,300 gal	25 loads	150,000 gal	28.3	138	151	127
GrandView	Apr 2017	Corn grain	New Barn 2	Injector 6000	2-yr P	5,300 gal	71.9 loads	431,400 gal	81.4	138	151	127
GrandView	Apr 2017	Corn grain	Old Barn 1	Injector 6000	2-yr P	5,300 gal	14.1 loads	84,600 gal	16.0	138	151	127
GrandView	Apr 2017	Corn grain	Old Barn 2	Injector 6000	2-yr P	5,300 gal	14.1 loads	84,600 gal	16.0	138	151	127
GrandView	May 2017	Corn grain	32-0-0	Inject	Supp. N	25 gal		6,233 gal	249.3	88	0	0
GrandView	May 2018	Corn grain	32-0-0	Inject	1-yr N	50 gal		12,465 gal	249.3	177	0	0
GrandView	Mar 2019	Corn grain	New Barn 2	Injector 6000	2-yr P	5,300 gal	187.5 loads	1,125,000 gal	212.3	138	151	127
GrandView	Apr 2019	Corn grain	New Barn 1	Injector 6000	2-yr P	5,300 gal	32.7 loads	196,200 gal	37.0	138	151	127
GrandView	May 2019	Corn grain	32-0-0	Inject	Supp. N	12 gal		2,992 gal	249.3	42	0	0
GrandView	May 2020	Corn grain	32-0-0	Inject	1-yr N	50 gal		12,465 gal	249.3	177	0	0
GrandView	Nov 2020	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,300 gal	161.8 loads	970,800 gal	183.2	138	151	127
GrandView	Nov 2020	Corn grain	Old Barn 1	Injector 6000	2-yr P	5,300 gal	29.2 loads	175,200 gal	33.1	138	151	127
GrandView	Nov 2020	Corn grain	Old Barn 2	Injector 6000	2-yr P	5,300 gal	29.2 loads	175,200 gal	33.1	138	151	127
GrandView	May 2021	Corn grain	32-0-0	Inject	Supp. N	12 gal		2,992 gal	249.3	42	0	0
Hester	May 2017	Corn grain	32-0-0	Inject	1-yr N	46 gal		3,008 gal	65.4	163	0	0
Hester	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	26 gal		1,700 gal	65.4	92	0	0
Hester	Apr 2019	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	56.7 loads	340,200 gal	65.4	135	148	124
Hester	May 2019	Corn grain	32-0-0	Inject	Supp. N	7 gal		458 gal	65.4	25	0	0
Hester	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal		1,570 gal	65.4	85	0	0
Hester	Nov 2020	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	56.7 loads	340,200 gal	65.4	135	148	124
Hester	May 2021	Corn grain	32-0-0	Inject	Supp. N	7 gal		458 gal	65.4	25	0	0
Hester	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal		1,570 gal	65.4	85	0	0
Jernigan	Apr 2018	Corn grain	New Barn 2	Injector 6000	2-yr P	5,200 gal	172.6 loads	1,035,600 gal	199.2	135	148	124
Jernigan	Apr 2018	Corn grain	Old Barn 2	Injector 6000	2-yr P	5,200 gal	20 loads	120,000 gal	23.1	135	148	124
Jernigan	Apr 2018	Corn grain	Old Barn 1	Injector 6000	2-yr P	5,200 gal	20 loads	120,000 gal	23.1	135	148	124
Jernigan	Apr 2018	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	13 loads	78,000 gal	15.0	135	148	124

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Jernigan	May 2018	Corn grain	32-0-0	Inject	Supp. N	7 gal		1,823 gal	260.4	25	0	0
Jernigan	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal		6,250 gal	260.4	85	0	0
Jernigan	Apr 2020	Corn grain	New Barn 2	Injector 6000	2-yr P	5,200 gal	104.2 loads	625,200 gal	120.2	135	148	124
Jernigan	Apr 2020	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	102.3 loads	613,800 gal	118.0	135	148	124
Jernigan	Apr 2020	Corn grain	Old Barn 1	Injector 6000	2-yr P	5,200 gal	19.3 loads	115,800 gal	22.3	135	148	124
Jernigan	May 2020	Corn grain	32-0-0	Inject	Supp. N	7 gal		1,823 gal	260.4	25	0	0
Jernigan	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal		6,250 gal	260.4	85	0	0
Mammaw	Apr 2018	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,200 gal	76 loads	456,000 gal	87.7	135	148	124
Mammaw	May 2018	Corn grain	32-0-0	Inject	Supp. N	7 gal		613 gal	87.6	25	0	0
Mammaw	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal		2,102 gal	87.6	85	0	0
Mammaw	Apr 2020	Corn grain	Barn 5 (2017)	Injector 6000	2-yr P	5,200 gal	76 loads	456,000 gal	87.7	135	148	124
Mammaw	May 2020	Corn grain	32-0-0	Inject	Supp. N	7 gal		613 gal	87.6	25	0	0
Mammaw	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal		2,102 gal	87.6	85	0	0
McCullough	May 2017	Corn grain	32-0-0	Inject	1-yr N	46 gal		1,780 gal	38.7	163	0	0
McCullough	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	26 gal		1,006 gal	38.7	92	0	0
McCullough	Apr 2019	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	33.6 loads	201,600 gal	38.8	135	148	124
McCullough	May 2019	Corn grain	32-0-0	Inject	Supp. N	7 gal		271 gal	38.7	25	0	0
McCullough	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal		929 gal	38.7	85	0	0
McCullough	Mar 2021	Corn grain	New Barn 2	Injector 6000	2-yr P	5,200 gal	33.6 loads	201,600 gal	38.8	135	148	124
McCullough	May 2021	Corn grain	32-0-0	Inject	Supp. N	7 gal		271 gal	38.7	25	0	0
McCullough	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal		929 gal	38.7	85	0	0
Thurman	May 2017	Corn grain	32-0-0	Inject	1-yr N	46 gal		1,886 gal	41.0	163	0	0
Thurman	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	26 gal		1,066 gal	41.0	92	0	0
Thurman	Apr 2019	Corn grain	Old Barn 1	Injector 6000	2-yr P	5,200 gal	20.8 loads	124,800 gal	24.0	135	148	124
Thurman	Apr 2019	Corn grain	Old Barn 2	Injector 6000	2-yr P	5,200 gal	14.8 loads	88,800 gal	17.1	135	148	124
Thurman	May 2019	Corn grain	32-0-0	Inject	Supp. N	7 gal		287 gal	41.0	25	0	0
Thurman	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal		984 gal	41.0	85	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Thurman	Mar 2021	Corn grain	New Barn 1	Injector 6000	2-yr P	5,200 gal	35.6 loads	213,600 gal	41.1	135	148	124
Thurman	May 2021	Corn grain	32-0-0	Inject	Supp. N	7 gal		287 gal	41.0	25	0	0
Thurman	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal		984 gal	41.0	85	0	0
Winters	Apr 2018	Corn grain	Barn 6 (2017)	Injector 6000	2-yr P	5,200 gal	29.7 loads	178,200 gal	34.3	135	148	124
Winters	May 2018	Corn grain	32-0-0	Inject	Supp. N	7 gal		239 gal	34.2	25	0	0
Winters	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal		821 gal	34.2	85	0	0
Winters	Apr 2020	Corn grain	New Barn 2	Injector 6000	2-yr P	5,200 gal	29.7 loads	178,200 gal	34.3	135	148	124
Winters	May 2020	Corn grain	32-0-0	Inject	Supp. N	7 gal		239 gal	34.2	25	0	0
Winters	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal		821 gal	34.2	85	0	0

Planned Nutrient Applications (Non-manure-spreadable Area)

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Benson Crop	May 2018	Corn grain	32-0-0	Inject	1-yr N	7 gal	34 gal	4.9	25	0	0
Benson Crop	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal	118 gal	4.9	85	0	0
Benson Crop	May 2020	Corn grain	32-0-0	Inject	1-yr N	7 gal	34 gal	4.9	25	0	0
Benson Crop	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal	118 gal	4.9	85	0	0
Benson Berm	May 2017	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	652 lbs	7,759 lbs	11.9	300	0	0
Benson Berm	May 2018	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	330 lbs	3,927 lbs	11.9	152	0	0
Benson Berm	May 2019	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	641 lbs	7,628 lbs	11.9	295	0	0
Benson Berm	May 2020	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	326 lbs	3,879 lbs	11.9	150	0	0
Benson Berm	May 2021	Bermuda common hay	46-0-0	Surface broadcast	1-yr N	641 lbs	7,628 lbs	11.9	295	0	0
Clay	May 2017	Corn grain	32-0-0	Inject	1-yr N	7 gal	27 gal	3.8	25	0	0
Clay	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	24 gal	91 gal	3.8	85	0	0
Clay	May 2019	Corn grain	32-0-0	Inject	1-yr N	7 gal	27 gal	3.8	25	0	0
Clay	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal	91 gal	3.8	85	0	0
Clay	May 2021	Corn grain	32-0-0	Inject	1-yr N	7 gal	27 gal	3.8	25	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Clay	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal	91 gal	3.8	85	0	0
Crews	May 2017	Corn grain	32-0-0	Inject	1-yr N	12 gal	218 gal	18.2	42	0	0
Crews	May 2018	Corn grain	32-0-0	Inject	1-yr N	50 gal	910 gal	18.2	177	0	0
Crews	May 2019	Corn grain	32-0-0	Inject	1-yr N	12 gal	218 gal	18.2	42	0	0
Crews	May 2020	Corn grain	32-0-0	Inject	1-yr N	50 gal	910 gal	18.2	177	0	0
Crews	May 2021	Corn grain	32-0-0	Inject	1-yr N	12 gal	218 gal	18.2	42	0	0
Cypress Creek	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	23 gal	198 gal	8.6	81	0	0
Cypress Creek	May 2020	Corn grain	32-0-0	Inject	1-yr N	6 gal	52 gal	8.6	21	0	0
Cypress Creek	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal	206 gal	8.6	85	0	0
Duck Hole	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal	72 gal	3.0	85	0	0
Duck Hole	May 2020	Corn grain	32-0-0	Inject	1-yr N	7 gal	21 gal	3.0	25	0	0
Duck Hole	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal	72 gal	3.0	85	0	0
GrandView	May 2017	Corn grain	32-0-0	Inject	1-yr N	25 gal	425 gal	17.0	88	0	0
GrandView	May 2018	Corn grain	32-0-0	Inject	1-yr N	50 gal	850 gal	17.0	177	0	0
GrandView	May 2019	Corn grain	32-0-0	Inject	1-yr N	12 gal	204 gal	17.0	42	0	0
GrandView	May 2020	Corn grain	32-0-0	Inject	1-yr N	50 gal	850 gal	17.0	177	0	0
GrandView	May 2021	Corn grain	32-0-0	Inject	1-yr N	12 gal	204 gal	17.0	42	0	0
Hester	May 2017	Corn grain	32-0-0	Inject	1-yr N	46 gal	115 gal	2.5	163	0	0
Hester	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	26 gal	65 gal	2.5	92	0	0
Hester	May 2019	Corn grain	32-0-0	Inject	1-yr N	7 gal	18 gal	2.5	25	0	0
Hester	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal	60 gal	2.5	85	0	0
Hester	May 2021	Corn grain	32-0-0	Inject	1-yr N	7 gal	18 gal	2.5	25	0	0
Hester	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal	60 gal	2.5	85	0	0
Jernigan	May 2018	Corn grain	32-0-0	Inject	1-yr N	7 gal	103 gal	14.7	25	0	0
Jernigan	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal	353 gal	14.7	85	0	0
Jernigan	May 2020	Corn grain	32-0-0	Inject	1-yr N	7 gal	103 gal	14.7	25	0	0
Jernigan	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal	353 gal	14.7	85	0	0
Mammaw	May 2018	Corn grain	32-0-0	Inject	1-yr N	7 gal	41 gal	5.9	25	0	0
Mammaw	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal	142 gal	5.9	85	0	0
Mammaw	May 2020	Corn grain	32-0-0	Inject	1-yr N	7 gal	41 gal	5.9	25	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P_2O_5 (lbs/ac)	Avail K_2O (lbs/ac)
Mammaw	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal	142 gal	5.9	85	0	0
McCullough	May 2017	Corn grain	32-0-0	Inject	1-yr N	46 gal	244 gal	5.3	163	0	0
McCullough	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	26 gal	138 gal	5.3	92	0	0
McCullough	May 2019	Corn grain	32-0-0	Inject	1-yr N	7 gal	37 gal	5.3	25	0	0
McCullough	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal	127 gal	5.3	85	0	0
McCullough	May 2021	Corn grain	32-0-0	Inject	1-yr N	7 gal	37 gal	5.3	25	0	0
McCullough	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal	127 gal	5.3	85	0	0
Thurman	May 2017	Corn grain	32-0-0	Inject	1-yr N	46 gal	331 gal	7.2	163	0	0
Thurman	Feb 2018	Small grain	32-0-0	Surface band	1-yr N	26 gal	187 gal	7.2	92	0	0
Thurman	May 2019	Corn grain	32-0-0	Inject	1-yr N	7 gal	50 gal	7.2	25	0	0
Thurman	Feb 2020	Small grain	32-0-0	Surface band	1-yr N	24 gal	173 gal	7.2	85	0	0
Thurman	May 2021	Corn grain	32-0-0	Inject	1-yr N	7 gal	50 gal	7.2	25	0	0
Thurman	Feb 2022	Small grain	32-0-0	Surface band	1-yr N	24 gal	173 gal	7.2	85	0	0
Winters	May 2018	Corn grain	32-0-0	Inject	1-yr N	7 gal	11 gal	1.5	25	0	0
Winters	Feb 2019	Small grain	32-0-0	Surface band	1-yr N	24 gal	36 gal	1.5	85	0	0
Winters	May 2020	Corn grain	32-0-0	Inject	1-yr N	7 gal	11 gal	1.5	25	0	0
Winters	Feb 2021	Small grain	32-0-0	Surface band	1-yr N	24 gal	36 gal	1.5	85	0	0

3.7. Field Nutrient Balance (Manure-spreadable Area)

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
					N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	P_2O_5	K_2O
		ac		per ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac
2017	Benson Crop	166.6	Small grain	80	75	40	20								
2017	Benson Crop	166.6	Soybean	40	0	20	40	0	0	0	-75	-60	-60	-72	-84
2018	Benson Crop	166.6	Corn grain	170	160	70	70	160	148	124	0	78	54	73	75
2019	Benson Crop	166.6	Small grain	80	90	40	20								
2019	Benson Crop	166.6	Soybean	40	0	20	40	85	0	0	0[g]	18	-6	1	-9
2020	Benson Crop	166.6	Corn grain	170	160	70	70	160	148	124	2[g]	96	54	74	75
2021	Benson Crop	166.6	Small grain	80	90	40	20								
2021	Benson Crop	166.6	Soybean	40	0	20	40	85	0	0	0[g]	36	-6	2	-9
Total	**Benson Crop**				**575**	**320**	**320**	**490**	**296**	**248**					
2017	Benson Berm	44.3	Bermuda common hay	6	300	80	60	300	0	0	0	-80	-60	-72	-300
2018	Benson Berm	44.3	Bermuda common hay	6	300	80	60	300	162	136	0	82	76	90	-164
2019	Benson Berm	44.3	Bermuda common hay	6	300	80	60	295	0	0	0[g]	2	16	18	-300
2020	Benson Berm	44.3	Bermuda common hay	6	300	80	60	298	162	136	0[g]	84	92	108	-164
2021	Benson Berm	44.3	Bermuda common hay	6	300	80	60	295	0	0	0[g]	4	32	36	-300
Total	**Benson Berm**				**1500**	**400**	**300**	**1488**	**324**	**272**					
2017	Clay	31.9	Corn grain	170	160	0	70	160	148	124	0	148	54	73	75
2018	Clay	31.9	Small grain	80	90	0	20								
2018	Clay	31.9	Soybean	40	0	0	40	85	0	0	0[g]	148	-6	1	-9
2019	Clay	31.9	Corn grain	170	160	0	70	160	148	124	2[g]	296	54	74	75
2020	Clay	31.9	Small grain	80	90	0	20								
2020	Clay	31.9	Soybean	40	0	0	40	85	0	0	0[g]	296	-6	2	-9
2021	Clay	31.9	Corn grain	170	160	0	70	160	148	124	2[g]	444	54	75	75
Total	**Clay**				**660**	**0**	**330**	**650**	**444**	**372**					
2017	Crews	132.4	Corn grain	170	180	0	70	180	151	127	0	151	57	76	78
2018	Crews	132.4	Corn grain	170	180	0	70	177	0	0	2[g]	151	-13	1	29
2019	Crews	132.4	Corn grain	170	180	0	70	180	151	127	2[g]	302	57	77	107
2020	Crews	132.4	Corn grain	170	180	0	70	177	0	0	2[g]	302	-13	2	58
2021	Crews	132.4	Corn grain	170	180	0	70	180	151	127	2[g]	453	57	78	136

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
Total	**Crews**				**900**	**0**	**350**	**894**	**453**	**381**					
2017	Cypress Creek	48.7	Small grain	80	75	0	0								
2017	Cypress Creek	48.7	Soybean	40	0	0	0	0	0	0	-75	0	0	-72	-84
2018	Cypress Creek	48.7	Corn grain	170	160	0	0	270	296	248	110	296	248	221	199
2019	Cypress Creek	48.7	Small grain	80	90	0	0								
2019	Cypress Creek	48.7	Soybean	40	0	0	0	81	0	0	19	296	248	149	115
2020	Cypress Creek	48.7	Corn grain	170	160	0	0	156	148	124	09	444	372	222	190
2021	Cypress Creek	48.7	Small grain	80	90	0	0								
2021	Cypress Creek	48.7	Soybean	40	0	0	0	85	0	0	09	444	372	150	106
Total	**Cypress Creek**				**575**	**0**	**0**	**592**	**444**	**372**					
2017	Duck Hole	19.0	Small grain		75	0	20								
2017	Duck Hole	19.0	Soybean	40	0	0	40	0	0	0	-75	0	-60		
2018	Duck Hole	19.0	Corn grain	170	160	0	70	162	177	149	2	177	79	102	100
2019	Duck Hole	19.0	Small grain	80	90	0	20								
2019	Duck Hole	19.0	Soybean	40	0	0	40	85	0	0	19	177	19	30	16
2020	Duck Hole	19.0	Corn grain	170	160	0	70	160	148	124	29	325	73	103	91
2021	Duck Hole	19.0	Small grain	80	90	0	20								
2021	Duck Hole	19.0	Soybean	40	0	0	40	85	0	0	09	325	13	31	7
Total	**Duck Hole**				**575**	**0**	**320**	**492**	**325**	**273**					
2017	GrandView	249.3	Corn grain	170	180	0	0	182	103	87	2	103	87	28	38
2018	GrandView	249.3	Corn grain	170	180	0	0	177	0	0	09	103	87	-47	-11
2019	GrandView	249.3	Corn grain	170	180	0	0	180	151	127	19	254	214	76	78
2020	GrandView	249.3	Corn grain	170	180	0	0	177	0	0	29	254	214	1	29
2021	GrandView	249.3	Corn grain	170	180	0	0	180	151	127	29	405	341	77	107
Total	**GrandView**				**900**	**0**	**0**	**896**	**405**	**341**					
2017	Hester	65.4	Corn grain	170	160	0	0	163	0	0	3	0	0	-75	-49
2018	Hester	65.4	Small grain	80	90	0	0								
2018	Hester	65.4	Soybean	40	0	0	0	92	0	0	2	0	0	-72	-84
2019	Hester	65.4	Corn grain	170	160	0	0	160	148	124	0	148	124	73	75

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
2020	Hester	65.4	Small grain	80	90	0	0								
2020	Hester	65.4	Soybean	40	0	0	0	85	0	0	0[g]	148	124	1	-9
2021	Hester	65.4	Corn grain	170	160	0	0	160	148	124	2[g]	296	248	74	75
Total	**Hester**				**660**	**0**	**0**	**660**	**296**	**248**					
2017	Jernigan	260.4	Small grain	80	75	0	0								
2017	Jernigan	260.4	Soybean	40	0	0	0	0	0	0	-75	0	0	-72	-84
2018	Jernigan	260.4	Corn grain	170	160	0	0	160	148	124	0	148	124	73	75
2019	Jernigan	260.4	Small grain	80	90	0	0								
2019	Jernigan	260.4	Soybean	40	0	0	0	85	0	0	0[g]	148	124	1	-9
2020	Jernigan	260.4	Corn grain	170	160	0	0	160	148	124	2[g]	296	248	74	75
2021	Jernigan	260.4	Small grain	80	90	0	0								
2021	Jernigan	260.4	Soybean	40	0	0	0	85	0	0	0[g]	296	248	2	-9
Total	**Jernigan**				**575**	**0**	**0**	**490**	**296**	**248**					
2017	Mammaw	87.6	Small grain	80	75	0	40								
2017	Mammaw	87.6	Soybean	40	0	0	80	0	0	0	-75	0	-120	-72	-84
2018	Mammaw	87.6	Corn grain	170	160	0	140	160	148	124	0	148	-16	73	75
2019	Mammaw	87.6	Small grain	80	90	0	40								
2019	Mammaw	87.6	Soybean	40	0	0	80	85	0	0	0[g]	148	-120	1	-9
2020	Mammaw	87.6	Corn grain	170	160	0	140	160	148	124	2[g]	296	-16	74	75
2021	Mammaw	87.6	Small grain	80	90	0	40								
2021	Mammaw	87.6	Soybean	40	0	0	80	85	0	0	0[g]	296	-120	2	-9
Total	**Mammaw**				**575**	**0**	**640**	**490**	**296**	**248**					
2017	McCullough	38.7	Corn grain	170	160	0	70	163	0	0	3	0	-70	-75	-49
2018	McCullough	38.7	Small grain	80	90	0	20								
2018	McCullough	38.7	Soybean	40	0	0	40	92	0	0	2	0	-60	-72	-84
2019	McCullough	38.7	Corn grain	170	160	0	70	160	148	124	0	148	54	73	75
2020	McCullough	38.7	Small grain	80	90	0	20								
2020	McCullough	38.7	Soybean	40	0	0	40	85	0	0	0[g]	148	-6	1	-9
2021	McCullough	38.7	Corn grain	170	160	0	70	160	148	124	2[g]	296	54	74	75

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
Total	**McCullough**				**660**	**0**	**330**	**660**	**296**	**248**					
2017	Thurman	41.0	Corn grain	170	160	0	70	163	0	0	3	0	-70	-75	-49
2018	Thurman	41.0	Small grain	80	90	0	20								
2018	Thurman	41.0	Soybean	40	0	0	40	92	0	0	2	0	-60	-72	-84
2019	Thurman	41.0	Corn grain	170	160	0	70	160	148	124	0	148	54	73	75
2020	Thurman	41.0	Small grain	80	90	0	20								
2020	Thurman	41.0	Soybean	40	0	0	40	85	0	0	0[g]	148	-6	1	-9
2021	Thurman	41.0	Corn grain	170	160	0	70	160	148	124	2[g]	296	54	74	75
Total	**Thurman**				**660**	**0**	**330**	**660**	**296**	**248**					
2017	Winters	34.2	Small grain	80	75	0	0								
2017	Winters	34.2	Soybean	40	0	0	0	0	0	0	-75	0	0	-72	-84
2018	Winters	34.2	Corn grain	170	160	0	0	160	148	124	0	148	124	73	75
2019	Winters	34.2	Small grain	80	90	0	0								
2019	Winters	34.2	Soybean	40	0	0	0	85	0	0	0[g]	148	124	1	-9
2020	Winters	34.2	Corn grain	170	160	0	0	160	148	124	2[g]	296	248	74	75
2021	Winters	34.2	Small grain	80	90	0	0								
2021	Winters	34.2	Soybean	40	0	0	0	85	0	0	0[g]	296	248	2	-9
Total	**Winters**				**575**	**0**	**0**	**490**	**296**	**248**					

Field Nutrient Balance (Non-manure-spreadable Area)

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
2017	Benson Crop	4.9	Small grain	80	75	40	20								
2017	Benson Crop	4.9	Soybean	40	0	20	40	0	0	0	-75	-60	-60	-72	-84
2018	Benson Crop	4.9	Corn grain	170	160	70	70	25	0	0	-135	-70	-70	-75	-49
2019	Benson Crop	4.9	Small grain	80	90	40	20								
2019	Benson Crop	4.9	Soybean	40	0	20	40	85	0	0	-5	-60	-60	-72	-84
2020	Benson Crop	4.9	Corn grain	170	160	70	70	25	0	0	-135	-70	-70	-75	-49
2021	Benson Crop	4.9	Small grain	80	90	40	20								

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
2021	Benson Crop	4.9	Soybean	40	0	20	40	85	0	0	-5	-60	-60	-72	-84
Total	**Benson Crop**				**575**	**320**	**320**	**220**	**0**	**0**					
2017	Benson Berm	11.9	Bermuda common hay	6	300	80	60	300	0	0	0	-80	-60	-72	-300
2018	Benson Berm	11.9	Bermuda common hay	6	300	80	60	152	0	0	-148	-80	-60	-72	-300
2019	Benson Berm	11.9	Bermuda common hay	6	300	80	60	295	0	0	-5	-80	-60	-72	-300
2020	Benson Berm	11.9	Bermuda common hay	6	300	80	60	150	0	0	-150	-80	-60	-72	-300
2021	Benson Berm	11.9	Bermuda common hay	6	300	80	60	295	0	0	-5	-80	-60	-72	-300
Total	**Benson Berm**				**1500**	**400**	**300**	**1192**	**0**	**0**					
2017	Clay	3.8	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
2018	Clay	3.8	Small grain	80	90	0	20								
2018	Clay	3.8	Soybean	40	0	0	40	85	0	0	-5	0	-60	-72	-84
2019	Clay	3.8	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
2020	Clay	3.8	Small grain	80	90	0	20								
2020	Clay	3.8	Soybean	40	0	0	40	85	0	0	-5	0	-60	-72	-84
2021	Clay	3.8	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
Total	**Clay**				**660**	**0**	**330**	**245**	**0**	**0**					
2017	Crews	18.2	Corn grain	170	180	0	70	42	0	0	-138	0	-70	-75	-49
2018	Crews	18.2	Corn grain	170	180	0	70	177	0	0	-3	0	-70	-75	-49
2019	Crews	18.2	Corn grain	170	180	0	70	42	0	0	-138	0	-70	-75	-49
2020	Crews	18.2	Corn grain	170	180	0	70	177	0	0	-3	0	-70	-75	-49
2021	Crews	18.2	Corn grain	170	180	0	70	42	0	0	-138	0	-70	-75	-49
Total	**Crews**				**900**	**0**	**350**	**480**	**0**	**0**					
2017	Cypress Creek	8.6	Small grain	80	75	0	0								
2017	Cypress Creek	8.6	Soybean	40	0	0	0	0	0	0	-75	0	0	-72	-84
2018	Cypress Creek	8.6	Corn grain	170	160	0	0	0	0	0	-160	0	0	-75	-49
2019	Cypress Creek	8.6	Small grain	80	90	0	0								
2019	Cypress Creek	8.6	Soybean	40	0	0	0	81	0	0	-9	0	0	-72	-84
2020	Cypress Creek	8.6	Corn grain	170	160	0	0	21	0	0	-139	0	0	-75	-49
2021	Cypress Creek	8.6	Small grain	80	90	0	0								

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
2021	Cypress Creek	8.6	Soybean	40	0	0	0	85	0	0	-5	0	0	-72	-84
Total	**Cypress Creek**				**575**	**0**	**0**	**187**	**0**	**0**					
2017	Duck Hole	3.0	Small grain		75	0	20								
2017	Duck Hole	3.0	Soybean	40	0	0	40	0	0	0	-75	0	-60		
2018	Duck Hole	3.0	Corn grain	170	160	0	70	0	0	0	-160	0	-70	-75	-49
2019	Duck Hole	3.0	Small grain	80	90	0	20								
2019	Duck Hole	3.0	Soybean	40	0	0	40	85	0	0	-5	0	-60	-72	-84
2020	Duck Hole	3.0	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
2021	Duck Hole	3.0	Small grain	80	90	0	20								
2021	Duck Hole	3.0	Soybean	40	0	0	40	85	0	0	-5	0	-60	-72	-84
Total	**Duck Hole**				**575**	**0**	**320**	**195**	**0**	**0**					
2017	GrandView	17.0	Corn grain	170	180	0	0	88	0	0	-92	0	0	-75	-49
2018	GrandView	17.0	Corn grain	170	180	0	0	177	0	0	-3	0	0	-75	-49
2019	GrandView	17.0	Corn grain	170	180	0	0	42	0	0	-138	0	0	-75	-49
2020	GrandView	17.0	Corn grain	170	180	0	0	177	0	0	-3	0	0	-75	-49
2021	GrandView	17.0	Corn grain	170	180	0	0	42	0	0	-138	0	0	-75	-49
Total	**GrandView**				**900**	**0**	**0**	**526**	**0**	**0**					
2017	Hester	2.5	Corn grain	170	160	0	0	163	0	0	3	0	0	-75	-49
2018	Hester	2.5	Small grain	80	90	0	0								
2018	Hester	2.5	Soybean	40	0	0	0	92	0	0	2	0	0	-72	-84
2019	Hester	2.5	Corn grain	170	160	0	0	25	0	0	-135	0	0	-75	-49
2020	Hester	2.5	Small grain	80	90	0	0								
2020	Hester	2.5	Soybean	40	0	0	0	85	0	0	-5	0	0	-72	-84
2021	Hester	2.5	Corn grain	170	160	0	0	25	0	0	-135	0	0	-75	-49
Total	**Hester**				**660**	**0**	**0**	**390**	**0**	**0**					
2017	Jernigan	14.7	Small grain	80	75	0	0								
2017	Jernigan	14.7	Soybean	40	0	0	0	0	0	0	-75	0	0	-72	-84
2018	Jernigan	14.7	Corn grain	170	160	0	0	25	0	0	-135	0	0	-75	-49
2019	Jernigan	14.7	Small grain	80	90	0	0								

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
2019	Jernigan	14.7	Soybean	40	0	0	0	85	0	0	-5	0	0	-72	-84
2020	Jernigan	14.7	Corn grain	170	160	0	0	25	0	0	-135	0	0	-75	-49
2021	Jernigan	14.7	Small grain	80	90	0	0								
2021	Jernigan	14.7	Soybean	40	0	0	0	85	0	0	-5	0	0	-72	-84
Total	**Jernigan**				**575**	**0**	**0**	**220**	**0**	**0**					
2017	Mammaw	5.9	Small grain	80	75	0	40								
2017	Mammaw	5.9	Soybean	40	0	0	80	0	0	0	-75	0	-120	-72	-84
2018	Mammaw	5.9	Corn grain	170	160	0	140	25	0	0	-135	0	-140	-75	-49
2019	Mammaw	5.9	Small grain	80	90	0	40								
2019	Mammaw	5.9	Soybean	40	0	0	80	85	0	0	-5	0	-120	-72	-84
2020	Mammaw	5.9	Corn grain	170	160	0	140	25	0	0	-135	0	-140	-75	-49
2021	Mammaw	5.9	Small grain	80	90	0	40								
2021	Mammaw	5.9	Soybean	40	0	0	80	85	0	0	-5	0	-120	-72	-84
Total	**Mammaw**				**575**	**0**	**640**	**220**	**0**	**0**					
2017	McCullough	5.3	Corn grain	170	160	0	70	163	0	0	3	0	-70	-75	-49
2018	McCullough	5.3	Small grain	80	90	0	20								
2018	McCullough	5.3	Soybean	40	0	0	40	92	0	0	2	0	-60	-72	-84
2019	McCullough	5.3	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
2020	McCullough	5.3	Small grain	80	90	0	20								
2020	McCullough	5.3	Soybean	40	0	0	40	85	0	0	-5	0	-60	-72	-84
2021	McCullough	5.3	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
Total	**McCullough**				**660**	**0**	**330**	**390**	**0**	**0**					
2017	Thurman	7.2	Corn grain	170	160	0	70	163	0	0	3	0	-70	-75	-49
2018	Thurman	7.2	Small grain	80	90	0	20								
2018	Thurman	7.2	Soybean	40	0	0	40	92	0	0	2	0	-60	-72	-84
2019	Thurman	7.2	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49
2020	Thurman	7.2	Small grain	80	90	0	20								
2020	Thurman	7.2	Soybean	40	0	0	40	85	0	0	-5	0	-60	-72	-84
2021	Thurman	7.2	Corn grain	170	160	0	70	25	0	0	-135	0	-70	-75	-49

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[a]			Nutrients Applied[b]			Balance After Recs[c]			Balance After Removal[d]	
		ac		per ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
Total	**Thurman**				**660**	**0**	**330**	**390**	**0**	**0**					
2017	Winters	1.5	Small grain	80	75	0	0								
2017	Winters	1.5	Soybean	40	0	0	0	0	0	0	-75	0	0	-72	-84
2018	Winters	1.5	Corn grain	170	160	0	0	25	0	0	-135	0	0	-75	-49
2019	Winters	1.5	Small grain	80	90	0	0								
2019	Winters	1.5	Soybean	40	0	0	0	85	0	0	-5	0	0	-72	-84
2020	Winters	1.5	Corn grain	170	160	0	0	25	0	0	-135	0	0	-75	-49
2021	Winters	1.5	Small grain	80	90	0	0								
2021	Winters	1.5	Soybean	40	0	0	0	85	0	0	-5	0	0	-72	-84
Total	**Winters**				**575**	**0**	**0**	**220**	**0**	**0**					

[a] Fertilizer Recs are the crop fertilizer recommendations. The N rec accounts for any N credit from previous legume crop.

[b] Nutrients Applied are the nutrients expected to be available to the crop from that year's manure applications plus nutrients from that year's commercial fertilizer applications and nitrates from irrigation water. With a double-crop year, the total nutrients applied for both crops and the year's balances are listed on the second crop's line.

[c] For N, Nutrients Applied minus Fertilizer Recs for indicated crop year. Also includes amount of residual N expected to become available that year from prior years' manure applications. For P_2O_5 and K_2O, Nutrients Applied minus Fertilizer Recs *through* the indicated crop year, with positive balances carried forward to subsequent years. Negative values indicate a potential need to apply additional nutrients.

[d] Nutrients Applied minus amount removed by harvested portion of crop through the indicated year. Positive balances are carried forward to subsequent years.

[e] Custom fertilizer recommendation.

[f] Legume crop is assumed to utilize some or all of the supplied N.

[g] Includes residual N expected to become available that year from prior years' manure applications.

3.8. Manure Inventory Annual Summary (Optional)

Manure Source	Plan Period	On Hand at Start of Period	Total Generated	Total Imported	Total Trans-ferred In	Total Applied	Total Exported	Total Trans-ferred Out	On Hand at End of Period	Units
New Barn 1	Mar '17 - Feb '18	500,000	900,000	0	170,000	649,800	0	0	920,200	gal
New Barn 2	Mar '17 - Feb '18	500,000	900,000	0	170,000	649,800	0	0	920,200	gal
Old Barn 1	Mar '17 - Feb '18	35,000	300,000	0	0	84,600	0	170,000	80,400	gal
Old Barn 2	Mar '17 - Feb '18	35,000	300,000	0	0	84,600	0	170,000	80,400	gal
North Lagoon	Mar '17 - Feb '18	3,000,000	0	0	0	0	0	0	3,000,000	gal
South Lagoon	Mar '17 - Feb '18	1,800,000	0	0	0	0	0	0	1,800,000	gal
Barn 5 (2017)	Mar '17 - Feb '18	0	900,000	0	0	150,000	0	0	750,000	gal
Barn 6 (2017)	Mar '17 - Feb '18	0	900,000	0	0	150,000	0	0	750,000	gal
All Sources	**Mar '17 - Feb '18**	**5,870,000**	**4,200,000**	**0**	**340,000**	**1,768,800**	**0**	**340,000**	**8,301,200**	**gal**
New Barn 1	Mar '18 - Feb '19	920,200	900,000	0	0	1,062,600	0	0	757,600	gal
New Barn 2	Mar '18 - Feb '19	920,200	900,000	0	300,000	1,069,800	0	0	1,050,400	gal
Old Barn 1	Mar '18 - Feb '19	80,400	300,000	0	0	120,000	0	150,000	110,400	gal
Old Barn 2	Mar '18 - Feb '19	80,400	300,000	0	0	120,000	0	150,000	110,400	gal
North Lagoon	Mar '18 - Feb '19	3,000,000	0	0	0	0	0	0	3,000,000	gal
South Lagoon	Mar '18 - Feb '19	1,800,000	0	0	0	0	0	0	1,800,000	gal
Barn 5 (2017)	Mar '18 - Feb '19	750,000	900,000	0	0	711,000	0	0	939,000	gal
Barn 6 (2017)	Mar '18 - Feb '19	750,000	900,000	0	0	1,350,000	0	0	300,000	gal
All Sources	**Mar '18 - Feb '19**	**8,301,200**	**4,200,000**	**0**	**300,000**	**4,433,400**	**0**	**300,000**	**8,067,800**	**gal**
New Barn 1	Mar '19 - Feb '20	757,600	900,000	0	170,000	904,200	0	0	923,400	gal
New Barn 2	Mar '19 - Feb '20	1,050,400	900,000	0	170,000	1,125,000	0	0	995,400	gal
Old Barn 1	Mar '19 - Feb '20	110,400	300,000	0	0	124,800	0	170,000	115,600	gal
Old Barn 2	Mar '19 - Feb '20	110,400	300,000	0	0	88,800	0	170,000	151,600	gal
North Lagoon	Mar '19 - Feb '20	3,000,000	0	0	0	0	0	0	3,000,000	gal
South Lagoon	Mar '19 - Feb '20	1,800,000	0	0	0	0	0	0	1,800,000	gal
Barn 5 (2017)	Mar '19 - Feb '20	939,000	900,000	0	0	0	1,000,000	0	839,000	gal
Barn 6 (2017)	Mar '19 - Feb '20	300,000	900,000	0	0	866,400	0	0	333,600	gal
All Sources	**Mar '19 - Feb '20**	**8,067,800**	**4,200,000**	**0**	**340,000**	**3,109,200**	**1,000,000**	**340,000**	**8,158,600**	**gal**
New Barn 1	Mar '20 - Feb '21	923,400	900,000	0	0	1,053,000	0	0	770,400	gal
New Barn 2	Mar '20 - Feb '21	995,400	900,000	0	0	803,400	0	0	1,092,000	gal
Old Barn 1	Mar '20 - Feb '21	115,600	300,000	0	0	330,600	0	0	85,000	gal
Old Barn 2	Mar '20 - Feb '21	151,600	300,000	0	0	366,600	0	0	85,000	gal
North Lagoon	Mar '20 - Feb '21	3,000,000	0	0	0	0	0	0	3,000,000	gal
South Lagoon	Mar '20 - Feb '21	1,800,000	0	0	0	0	0	0	1,800,000	gal
Barn 5 (2017)	Mar '20 - Feb '21	839,000	900,000	0	0	732,000	0	0	1,007,000	gal
Barn 6 (2017)	Mar '20 - Feb '21	333,600	900,000	0	0	970,800	0	0	262,800	gal
All Sources	**Mar '20 - Feb '21**	**8,158,600**	**4,200,000**	**0**	**0**	**4,256,400**	**0**	**0**	**8,102,200**	**gal**

Manure Source	Plan Period	On Hand at Start of Period	Total Generated	Total Imported	Total Trans-ferred In	Total Applied	Total Exported	Total Trans-ferred Out	On Hand at End of Period	Units
New Barn 1	Mar '21 - Feb '22	770,400	900,000	0	0	213,600	400,000	0	1,056,800	gal
New Barn 2	Mar '21 - Feb '22	1,092,000	900,000	0	0	201,600	800,000	0	990,400	gal
Old Barn 1	Mar '21 - Feb '22	85,000	300,000	0	0	138,600	100,000	0	146,400	gal
Old Barn 2	Mar '21 - Feb '22	85,000	300,000	0	0	114,600	110,000	0	160,400	gal
North Lagoon	Mar '21 - Feb '22	3,000,000	0	0	0	0	0	0	3,000,000	gal
South Lagoon	Mar '21 - Feb '22	1,800,000	0	0	0	0	0	0	1,800,000	gal
Barn 5 (2017)	Mar '21 - Feb '22	1,007,000	900,000	0	0	702,000	300,000	0	905,000	gal
Barn 6 (2017)	Mar '21 - Feb '22	262,800	900,000	0	0	166,200	0	0	996,600	gal
All Sources	**Mar '21 - Feb '22**	**8,102,200**	**4,200,000**	**0**	**0**	**1,536,600**	**1,710,000**	**0**	**9,055,600**	**gal**

3.9. Fertilizer Material Annual Summary (Optional)

Product Analysis	Plan Period	Product Needed Mar - Aug	Product Needed Sep - Dec	Product Needed Jan - Feb	Total Product Needed	Units
32-0-0	Mar '17 - Feb '18	16,078	0	5,019	21,097	gal
46-0-0	Mar '17 - Feb '18	36,642	0	0	36,642	lbs
32-0-0	Mar '18 - Feb '19	24,875	0	15,665	40,540	gal
46-0-0	Mar '18 - Feb '19	18,546	0	0	18,546	lbs
32-0-0	Mar '19 - Feb '20	6,373	0	4,700	11,073	gal
46-0-0	Mar '19 - Feb '20	36,024	0	0	36,024	lbs
32-0-0	Mar '20 - Feb '21	25,373	0	15,722	41,095	gal
46-0-0	Mar '20 - Feb '21	18,321	0	0	18,321	lbs
32-0-0	Mar '21 - Feb '22	6,373	0	4,700	11,073	gal
46-0-0	Mar '21 - Feb '22	36,024	0	0	36,024	lbs

3.10. Plan Nutrient Balance (Manure-spreadable Area)

	N (lbs)	P_2O_5 (lbs)	K_2O (lbs)
Total Manure Nutrients on Hand at Start of Plan[a]	40,177	37,108	41,113
Total Manure Nutrients Collected[b]	779,100	596,400	501,900
Total Manure Nutrients Imported[c]	0	0	0
Total Manure Nutrients Exported[d]	100,541	76,964	64,769
Total Manure Nutrients Gained/Lost in Transfer[e]	0	0	0
Total Manure Nutrients on Hand at End of Plan[f]	158,363	127,579	117,249
Total Manure Nutrients Applied[g]	560,930	430,090	360,911
Available Manure Nutrients Applied (Utilized by plan's crops)[h]	400,610	380,930	316,919
Available Manure Nutrients Applied (Not utilized by plan's crops)[i]	12,119	49,160	43,992
Commercial Fertilizer Nutrients Applied (Utilized by plan's crops)[j]	445,442	0	0
Commercial Fertilizer Nutrients Applied (Not utilized by plan's crops)[k]	15,045	0	0
Available Nutrients Applied (Manure and fertilizer; utilized by plan's crops)[l]	846,052	380,930	316,919
Nutrient Utilization Potential[m]	1,233,848	451,050	485,476
Nutrient Balance of Spreadable Acres[n p]	-387,796	-70,120	-168,557
Average Nutrient Balance per Spreadable Acre per Year[o p]	-64	-11	-28

a. Total manure nutrients present in storage at the beginning of the plan.
b. Total manure nutrients collected on the farm.
c. Total manure nutrients imported onto the farm.
d. Total manure nutrients exported from the farm to an external operation.
e. Net change in total manure nutrients due to transfers between storage units with differing analyses.
f. Total manure nutrients present in storage at the end of plan.
g. Total nutrients present in land-applied manure. These values do not account for losses due to rate, timing, and method of application.
h. Manure nutrients applied and available to crops in the plan. These values are based on the total manure nutrients applied after accounting for nutrient losses due to rate, timing, and method of application. Nutrients which will not be utilized by crops in the plan are excluded from these values.
i. Manure nutrients applied that will be utilized by crops outside the plan. This usually results from Fall nutrient applications at the end of the plan intended for crops in subsequent years.
j. Nutrients applied as commercial fertilizers and nitrates contained in irrigation water. Nutrients that will not be utilized by crops in the plan are excluded from these values.
k. Nutrients applied as commercial fertilizer which will be utilized by crops outside the plan.
l. Sum of available manure nutrients applied and commercial fertilizer nutrients applied.
m. Nutrient utilization potential of crops grown. For N the value is based on the N recommendation for non-legume crops and N uptake or other state-imposed limit for N application rates for legumes. P_2O_5 and K_2O values are based on fertilizer recommendations or crop removal (whichever is greater).
n. Available nutrients applied minus crop nutrient utilization potential. Negative values indicate additional nutrient utilization potential and positive values indicate over-application.
o. Average per acre-year nutrient balance. Values are calculated by dividing nutrient balance of spreadable acres by the number of spreadable acres in the plan and by the length of the plan in years. Negative values indicate additional nutrient utilization potential and positive values indicate over-application.

p. Non-trivial, positive values for N indicate that the plan was not properly developed. Negative values for N indicate additional nutrient utilization potential which may or may not be intentional. For example, plans that include legume crops often will not utilize the full N utilization potential for legume crops if manure can be applied to non-legume crops that require N for optimum yield. Positive values for P_2O_5 and/or K_2O do not necessarily indicate that the plan was developed improperly. For example, producers may be allowed to apply N-based application rates of manure to fields with low soil test P values or fields with a low potential P-loss risk based on the risk assessment tool used by the state. Negative values for P_2O_5 and K_2O indicate that planned applications to some fields are less than crop removal rates or fertilizer recommendations.

Plan Nutrient Balance (Non-manure-spreadable Area)

	N (lbs)	P_2O_5 (lbs)	K_2O (lbs)

	N (lbs)	P_2O_5 (lbs)	K_2O (lbs)
Commercial Fertilizer Nutrients Applied[a]	46,777	0	0
Nutrient Utilization Potential[b]	84,133	6,328	21,623
Nutrient Balance of Non-spreadable Acres[c e]	-37,356	-6,328	-21,623
Average Nutrient Balance per Non-spreadable Acre per Year[d e]	-71	-12	-41

a. Nutrients applied as commercial fertilizers and nitrates contained in irrigation water.
b. Nutrient utilization potential of crops grown based on crop fertilizer recommendations.
c. Commercial fertilizer nutrients applied minus crop nutrient utilization potential. Negative values indicate additional nutrient utilization potential and positive values indicate over-application.
d. Average per acre-year nutrient balance. Values are calculated by dividing nutrient balance of non-spreadable acres by number of non-spreadable acres in plan and by the length of the plan in years. Negative values indicate additional nutrient utilization potential and positive values indicate over-application.

e. Non-trivial, positive values for N indicate that the plan was not properly developed. Negative values for N indicate additional nutrient utilization potential which may or may not be intentional. Positive values for P_2O_5 and/or K_2O do not necessarily indicate that the plan was developed improperly. For example, multiple year applications may have been planned during the final plan year(s) and these nutrients will not be utilized by crops in the current plan. Negative values for P_2O_5 and K_2O indicate that applications to some fields may have been delayed to allow the producer to apply the nutrients in accordance with their fertilization schedule.

Closure Plan

In the event that Swine production at this location ceases, the following will be done within 360 days:

- All manure in all animal use areas will be removed and spread on the farm or spread elsewhere according to my current Nutrient Management Plan.
- The most current manure analysis will be provided to anyone removing manure from the farm.
- Any dead pigs on the farm will be disposed of at the time of closure according to methods outlined in my current Nutrient Management Plan and or allowable by Tennessee Law.
- Any manure which is land applied will be done so according to the rates discussed in my most recent Nutrient Management Plan.

The following will be completed within a reasonable period as allowable by law using Tennessee Natural Resources Conservation Service (NRCS) Standard Code 360- Closure of Waste Impoundments:

- Any manure storage facility (lagoon) located on the swine farm will be properly decommissioned.
- Any manure currently in storage at the time of closure will be removed and spread on the farm or spread elsewhere according to my current Nutrient Management Plan.
- The lagoon will be breached and backfilled and or converted to freshwater storage according to NRCS standards.

Bill Thompson

Date: 5/8/17

Record Keeping

This section includes a list of key records that Bill Thompson will keep in order to document and verify implementation of the procedures in this CNMP. Records shall be kept for a minimum of 5 years, or for the length of the contract, rotation, or permit, whichever is longer, for each field where manure is applied.

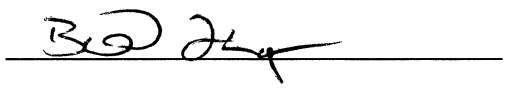
These general records include but are not limited to:

1. Soil Test Results
2. Weather and soil conditions 24 hours prior to, during and 24 hours application of manure, chemicals and pesticides.
3. Type, quantities, and sources of all nutrients generated and collected
4. Type, quantities, and sources of all nutrients applied to each field
5. Dates of manure applications
6. Inspection Reports
7. Operation and Maintenance records of conservation practices and equipment
8. Restricted pesticides used to meet label requirements
9. Equipment Calibration records
10. Crops planted, tillage method and dates planted
11. Crop harvest dates and yield
12. Adjustments to nutrient management plan based on records and changes in farming operations as appropriate
13. Weekly check of volume in pit
14. Annual visual inspection of retention structure (pits), animal holding areas, if applicable and land application areas
15. Records of mortalities and how managed

Declarations to Nutrient Management Plan:

By my signature below, I affirm that I have read, understand, and will comply with the following stipulations from Tennessee's CAFO regulations that apply to my CAFO operation:

1) All animals in confinement are prevented from coming in direct contact with waters of the state.
2) All chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.
3) Pesticide-contaminated waters will be prevented from discharging into waste retention structures. Waste from pest control and from facilities used to manage potentially hazardous or toxic chemicals shall be handled and disposed of in a manner that will prevent pollutants from entering waste retention structures or waters of the state.
4) Chemicals, manure/litter, and process wastewater will be managed to prevent spills. Spill clean-up plans will be developed and any equipment needed for spill clean-up will be available to facility personnel.
5) All sampling of soil and manure/litter is conducted according to protocols developed by UT Extension.
6) All records outlined in the permit that I am applying for will be maintained and available on-site.
7) Any confinement buildings, waste/wastewater handling or treatment systems, lagoons, holding ponds, and any other agricultural waste containment/treatment structures constructed or modified after April 13, 2006, are or will be located in accordance with NRCS Conservation Practice Standard 313.
8) A copy of the most recent Nutrient Management Plan will be kept as part of the farm records and will be maintained and implemented as written.
9) If applicable, all waste directed to under floor pits shall be composed entirely of wastewater (i.e. washwater and animal waste).
10) The Tennessee Department of Environment and Conservation Division of Water Resources will be notified of any significant wildlife mortalities near retention ponds or following any land application of animal wastes to fields.
11) All employees involved in work activities that relate to permit compliance will receive regular training on proper operation and maintenance (O&M) of the facility and waste disposal. Training shall include appropriate topics, such as land application of wastes, good housekeeping and material management practices, proper O&M of the facility, record keeping, and spill response and clean up. The periodic scheduled dates for such training shall be identified in the current Nutrient Management Plan.
12) There shall be no land application of nutrients within 24 hours of a precipitation event that may cause runoff. The operator shall not land apply nutrients to frozen, flooded, or saturated soils.



Signature of CAFO Owner/Operator

5/8/17

Date

Operation and Maintenance

Bill Thompson is responsible for safe operation and maintenance of the nutrient management plan including all equipment. Operation and maintenance includes the following items:

1. periodic plan review to determine if adjustments or modifications to the plan are needed. As minimum, plans will be reviewed/revised with each soil test cycle.
2. weekly there will be a visual inspection of pits
3. calibration of application equipment to ensure uniform distribution of material at planned rates.
4. documentation of the actual rate at which nutrients were applied. When the actual rates used differ from or exceed the recommended and planned rates, records will indicate the reasons for the differences.
5. Maintaining records to document plan implementation. As applicable, records include
    a. Soil test results and recommendations for nutrient application
    b. Quantities, analysis and sources of nutrients applied
    c. Dates and method of nutrient applications
    d. Crops planted, planting and harvest dates, yields, and residues removed
    e. Results of water, plant and organic byproduct analysis
    f. Dates of review and person performing the review and recommendations
    g. Conservation practices being applied.

Records will be maintained for five years or for a period longer than five years if required by other Federal, state, or local ordinances or program or contract requirements.

The disposal of material generated by the cleaning nutrient application equipment accomplished properly. Excess material should be collected and stored or field applied in an appropriate manner. Excess material should not be applied on areas of high potential risk for runoff and leaching.

The disposal/recycling of nutrient containers should be according to state and local guidelines or regulations.

Pesticides, toxic chemicals, and petroleum products will not be used in areas where leakage could enter the manure storage facility.

Conservation Practices Operation & Maintenance

Heavy Use Area Protection

The Operation and Maintenance (O&M) plan shall specify that the treatment areas and associated practices will be inspected annually and after significant storm events to identify repair and maintenance needs. The O&M plan shall contain the operational requirements for managing the heavy use area. Planned scraping intervals, replacement of fine material, storage, treatment, and/or utilization methods will also be described. Provisions for re-establishment of vegetated areas will be included. The O&M plan shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice. If using a front-end loader, recommend back dragging the manure/hay to conserve removal of gravel from the surface. Consider using fabricated large equipment tire for scraping surface. The O&M plan shall be provided to, and discussed with, the operator. The O&M plan must complement the Comprehensive Nutrient Management Plan, as necessary.

Composting Facility

An operation and maintenance (O&M) plan shall be developed consistent with the purposes of this standard, its intended life, safety requirements, and the criteria for its design. The O&M plan shall include recipe ingredients and sequence that they are layered and mixed, maximum and minimum temperature for operation, land application rates, moisture level, management of odors, testing, etc. Make adjustments throughout the composting period to ensure proper composting processes. The compost facility should be inspected regularly when the facility is empty. Replace deteriorated wooden materials or hardware. Patch concrete floors and curbs as necessary to assure water tightness. Roof structures should be examined for structural integrity and repaired as needed. Exposed metal components should be inspected for corrosion. Corroded metal should be wire brushed and painted as necessary. Closely monitor temperatures above 165^{o}F. Take action immediately to cool piles that have reached temperatures above 185^{o}F. The operation and maintenance plan shall state that composting is a biological process. It requires a combination of art and science for success. Hence, the operation may need to undergo some trial and error in the start-up of a new composting facility.

Nutrient Management (590)

The owner/client is responsible for safe operation and maintenance of the nutrient management plan including all equipment. Operation and maintenance addresses the following:

1. periodic plan review to determine if adjustments or modifications to the plan are needed. As a minimum, plans will be reviewed/revised with each soil test cycle.
2. protection of fertilizer and organic byproduct storage facilities from weather and accidental leakage or spillage.
3. calibration of application equipment to ensure uniform distribution of material at planned rates.
4. documentation of the actual rate at which nutrients were applied. When the actual rates used differ from or exceed the recommended and planned rates, records will indicate the reasons for the differences.
5. Maintaining records to document plan implementation. As applicable, records include:

soil test results and recommendations for nutrient application,

quantities, analyses and sources of nutrients applied,

dates and method of nutrient applications,

crops planted, planting and harvest dates, yields, and residues removed,

results of water, plant, and organic byproduct analyses, and

dates of review and person performing the review, and recommendations.

Records should be maintained for five years or for a period longer than five years if required by other Federal, state, or local ordinances, or program or contract requirements. Workers shall be protected from and avoid unnecessary contact with chemical fertilizers and organic by-products. Protection should include the use of protective clothing when working with plant nutrients. Extra caution must be taken when handling ammonia sources of nutrients, or when dealing with organic wastes stored in unventilated enclosures. The disposal of material generated by the cleaning nutrient application equipment should be accomplished properly. Excess material should be collected and stored or field applied in an appropriate manner. Excess material should not be applied on areas of high potential risk for runoff and leaching. The disposal/recycling of nutrient containers should be according to state and local guidelines or regulations.

Waters Agricultural Laboratories, Inc.

Manure/Sludge Analysis and Application Report

2101 Calhoun Rd. Highway 81 Owensboro, Kentucky 42301 Phone: (270) 685-4039

Ship To:
JT Workman
3385 State Rte 1826
Clinton, KY 42031-

Grower: **JT Workman**

SampleNumber: **Thompson**
Lab Number: **36172MS**
Type:

Date Submitted: **04/03/2017**
Report Date: **04/03/2017**

	Parts per million (ppm)	Pounds per 1000 gallons
Nitrogen – Total	4449	37.105
Ammonia Nitrogen	3640	30.358
P2O5 – Total	3409.5	28.435
K2O –Total	2870.5	23.940

Moisture	96.54 %	

Results Reported On: L=LIQUID BASIS

Remarks Suggest the use of PLANT and SOIL analysis to monitor the need for additional and/or build up of some elements.

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location BENSON						
Sample Identification			1A	1B	1C	1D	2A
Lab Number			1204-1	1205-1	1206-1	1207-1	1208-1
Total Exchange Capacity (ME/100 g)			11.83	9.27	13.80	11.79	12.11
pH	Buffer (SMP/Sikora)		7.0	7.1	7.2	7.2	7.1
	H_2O (1:1)		5.6	6.2	6.0	6.2	5.7
Organic Matter (humus) %			2.09	2.02	1.78	2.04	1.91
Estimated Nitrogen Release		lb/A	62	60	56	61	58
ANIONS	SOLUBLE SULFUR*	ppm	11	10	11	9	11
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	211	174	115	105	151
		ppm of P					
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	2574	2610	3588	3310	2878
		ppm					
	MAGNESIUM*	lb/A	234	188	312	282	216
		ppm					
	POTASSIUM*	lb/A	322	224	230	178	240
		ppm					
	SODIUM*	lb/A	36	36	194	38	34
		ppm					
BASE SATURATION PERCENT							
Calcium		%	54.40	70.39	65.00	70.19	59.41
Magnesium		%	8.24	8.45	9.42	9.97	7.43
Potassium		%	3.49	3.10	2.14	1.94	2.54
Sodium		%	0.66	0.84	3.06	0.70	0.61
Other Bases		%	6.20	5.20	5.40	5.20	6.00
Hydrogen		%	27.00	12.00	15.00	12.00	24.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.80	0.77	0.39	0.38	0.39
Iron* (ppm)			212	203	176	186	175
Manganese* (ppm)			193	217	121	179	138
Copper* (ppm)			2.59	3.56	2.87	2.88	2.68
Zinc* (ppm)			4.68	5.95	5.24	7.39	4.26
Aluminum* (ppm)			824	714	853	732	795
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location	BENSON		1	1	1	1	1
Sample Identification			2B	2C	2D	2E	2F
Lab Number			1209-1	1210-1	1211-1	1212-1	1213-1
Total Exchange Capacity (ME/100 g)			12.43	12.34	11.18	14.37	12.47
pH		Buffer (SMP/Sikora)	7.1	7.2	7.2	7.1	7.2
		H_2O (1:1)	6.1	6.0	6.3	5.9	5.7
Organic Matter (humus) %			2.23	2.03	1.91	2.33	1.95
Estimated Nitrogen Release		lb/A	65	61	58	67	59
ANIONS	SOLUBLE SULFUR*	ppm	9	10	8	15	15
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	307	243	133	115	224
		ppm of P					
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5					
		ppm of P					
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	3464	3388	3248	3606	2796
		ppm					
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A	234	232	206	380	304
		ppm					
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A	318	246	310	240	310
		ppm					
EXCHANGEABLE CATIONS	SODIUM*	lb/A	30	34	28	34	34
		ppm					
BASE SATURATION PERCENT							
Calcium		%	69.67	68.64	72.63	62.73	56.05
Magnesium		%	7.84	7.83	7.68	11.02	10.16
Potassium		%	3.28	2.56	3.55	2.14	3.19
Sodium		%	0.52	0.60	0.54	0.51	0.59
Other Bases		%	5.20	5.40	5.10	5.60	6.00
Hydrogen		%	13.50	15.00	10.50	18.00	24.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.48	0.42	0.38	0.52	0.48
Iron* (ppm)			188	192	157	172	199
Manganese* (ppm)			122	127	129	110	125
Copper* (ppm)			5.16	3.65	1.84	2.88	2.80
Zinc* (ppm)			8.14	5.71	2.52	4.52	5.76
Aluminum* (ppm)			799	795	751	879	876
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location	BENSON		1	1	1	1	1
Sample Identification			3A	3B	3C	4A	4B
Lab Number			1214-1	1215-1	1216-1	1217-1	1218-1
Total Exchange Capacity (ME/100 g)			12.75	12.99	12.34	11.33	11.07
pH	Buffer (SMP/Sikora)		7.3	7.3	7.2	7.1	7.2
	H_2O (1:1)		6.3	6.7	5.8	6.0	5.7
Organic Matter (humus) %			1.77	1.87	1.90	2.17	1.93
Estimated Nitrogen Release		lb/A	55	57	58	63	59
ANIONS	SOLUBLE SULFUR*	ppm	11	12	14	17	13
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	115	165	101	55	60
		ppm of P					
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5					
		ppm of P					
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	3774	4138	3054	2826	2498
		ppm					
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A	228	226	250	388	290
		ppm					
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A	234	260	202	182	168
		ppm					
EXCHANGEABLE CATIONS	SODIUM*	lb/A	36	80	46	48	38
		ppm					
BASE SATURATION PERCENT							
Calcium		%	74.00	79.64	61.87	62.36	56.41
Magnesium		%	7.45	7.25	8.44	14.27	10.92
Potassium		%	2.35	2.57	2.10	2.06	1.95
Sodium		%	0.61	1.34	0.81	0.92	0.75
Other Bases		%	5.10	4.70	5.80	5.40	6.00
Hydrogen		%	10.50	4.50	21.00	15.00	24.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.47	0.66	0.38	0.41	0.42
Iron* (ppm)			169	171	181	167	164
Manganese* (ppm)			146	160	164	112	143
Copper* (ppm)			1.99	3.70	1.77	2.38	2.33
Zinc* (ppm)			2.56	3.89	3.11	3.72	3.09
Aluminum* (ppm)			752	676	776	863	768
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location	BENSON	1	1	1	1	
Sample Identification		4C	5A	5B	5C	
Lab Number		1219-1	1220-1	1221-1	1222-1	
Total Exchange Capacity (ME/100 g)		12.39	13.40	13.35	12.70	
pH	Buffer (SMP/Sikora)	7.0	7.2	7.0	7.1	
	H_2O (1:1)	5.8	5.8	5.4	5.5	
Organic Matter (humus) %		2.26	2.13	1.90	2.01	
Estimated Nitrogen Release	lb/A	65	63	58	60	
ANIONS — SOLUBLE SULFUR*	ppm	15	13	15	11	
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5	82	133	105	165	
	ppm of P					
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5					
	ppm of P					
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A	2830	3338	2654	2780	
	ppm					
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A	368	248	248	186	
	ppm					
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A	294	266	232	212	
	ppm					
EXCHANGEABLE CATIONS — SODIUM*	lb/A	38	40	44	36	
	ppm					
BASE SATURATION PERCENT						
Calcium	%	57.10	62.28	49.70	54.72	
Magnesium	%	12.38	7.71	7.74	6.10	
Potassium	%	3.04	2.54	2.23	2.14	
Sodium	%	0.67	0.65	0.72	0.62	
Other Bases	%	5.80	5.80	6.60	6.40	
Hydrogen	%	21.00	21.00	33.00	30.00	
EXTRACTABLE MINORS						
Boron* (ppm)		0.45	0.56	0.45	0.46	
Iron* (ppm)		178	183	186	209	
Manganese* (ppm)		107	113	114	133	
Copper* (ppm)		2.77	1.89	1.73	2.33	
Zinc* (ppm)		4.01	2.68	1.75	3.28	
Aluminum* (ppm)		824	768	825	729	
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location	CYPRESS CREEK	1	1	1	1	
Sample Identification		1A	1B	1C	1D	
Lab Number		1223-1	1224-1	1225-1	1226-1	
Total Exchange Capacity (ME/100 g)		10.66	9.44	8.75	11.54	
pH	Buffer (SMP/Sikora)	7.3	7.3	7.2	7.2	
	H_2O (1:1)	6.8	6.1	6.3	6.3	
Organic Matter (humus) %		1.93	1.78	1.60	1.90	
Estimated Nitrogen Release	lb/A	59	56	52	58	
ANIONS — SOLUBLE SULFUR*	ppm	8	12	12	10	
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5	485	334	156	151	
	ppm of P					
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5					
	ppm of P					
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A	3390	2484	2484	3298	
	ppm					
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A	184	190	180	260	
	ppm					
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A	412	448	252	238	
	ppm					
EXCHANGEABLE CATIONS — SODIUM*	lb/A	38	46	48	50	
	ppm					
BASE SATURATION PERCENT						
Calcium	%	79.50	65.78	70.97	71.45	
Magnesium	%	7.19	8.39	8.57	9.39	
Potassium	%	4.96	6.08	3.69	2.64	
Sodium	%	0.77	1.06	1.19	0.94	
Other Bases	%	4.60	5.20	5.10	5.10	
Hydrogen	%	3.00	13.50	10.50	10.50	
EXTRACTABLE MINORS						
Boron* (ppm)		0.57	0.39	0.42	0.40	
Iron* (ppm)		255	204	178	186	
Manganese* (ppm)		214	271	259	194	
Copper* (ppm)		3.31	2.81	2.56	2.46	
Zinc* (ppm)		9.85	5.96	4.94	4.62	
Aluminum* (ppm)		580	679	680	677	
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location	DUCK HOLE		1	1			
Sample Identification			1A	1B			
Lab Number			1227-1	1228-1			
Total Exchange Capacity (ME/100 g)			15.48	10.71			
pH	Buffer (SMP/Sikora)		6.9	7.3			
	H_2O (1:1)		5.6	6.4			
Organic Matter (humus) %			2.20	1.82			
Estimated Nitrogen Release		lb/A	64	56			
ANIONS	SOLUBLE SULFUR*	ppm	11	14			
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	147	101			
		ppm of P					
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	3118	2946			
		ppm					
	MAGNESIUM*	lb/A	498	308			
		ppm					
	POTASSIUM*	lb/A	248	152			
		ppm					
	SODIUM*	lb/A	70	168			
		ppm					
BASE SATURATION PERCENT							
Calcium		%	50.36	68.77			
Magnesium		%	13.40	11.98			
Potassium		%	2.05	1.82			
Sodium		%	0.98	3.41			
Other Bases		%	6.20	5.00			
Hydrogen		%	27.00	9.00			
EXTRACTABLE MINORS							
Boron* (ppm)			0.40	0.49			
Iron* (ppm)			299	271			
Manganese* (ppm)			132	160			
Copper* (ppm)			2.24	2.19			
Zinc* (ppm)			4.87	2.71			
Aluminum* (ppm)			712	494			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-9

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location MAM MAW				1	1	1	1	1
Sample Identification				1A	1B	1C	1D	1E
Lab Number				1229-1	1230-1	1231-1	1232-1	1233-1
Total Exchange Capacity (ME/100 g)				9.70	8.51	9.36	12.54	10.49
pH		Buffer (SMP/Sikora)		7.5	NA	NA	NA	7.5
		H_2O (1:1)		6.8	7.1	7.2	7.1	6.9
Organic Matter (humus) %				1.39	1.40	1.65	1.51	1.61
Estimated Nitrogen Release			lb/A	48	48	53	50	52
ANIONS	SOLUBLE SULFUR*		ppm	15	8	14	16	7
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	105	69	229	197	82
			ppm of P					
	PHOSPHORUS BRAY II		lb/A P as P_2O_5					
			ppm of P					
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	2758	2564	2680	3650	3260
			ppm					
	MAGNESIUM*		lb/A	368	310	368	552	340
			ppm					
	POTASSIUM*		lb/A	118	112	140	146	114
			ppm					
	SODIUM*		lb/A	178	138	256	180	70
			ppm					
BASE SATURATION PERCENT								
Calcium			%	71.08	75.32	71.58	72.77	77.69
Magnesium			%	15.81	15.18	16.38	18.34	13.50
Potassium			%	1.56	1.69	1.92	1.49	1.39
Sodium			%	3.99	3.53	5.95	3.12	1.45
Other Bases			%	4.60	4.30	4.20	4.30	4.50
Hydrogen			%	3.00	0.00	0.00	0.00	1.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.48	0.56	0.73	0.57	0.48
Iron* (ppm)				277	251	377	334	246
Manganese* (ppm)				108	93	68	60	74
Copper* (ppm)				5.36	1.91	2.08	2.39	1.98
Zinc* (ppm)				3.71	2.38	5.40	3.01	2.71
Aluminum* (ppm)				334	349	266	349	341
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location MAM MAW			1	1	1		
Sample Identification			1F	1G	1H		
Lab Number			1234-1	1235-1	1236-1		
Total Exchange Capacity (ME/100 g)			14.98	12.52	9.50		
pH	Buffer (SMP/Sikora)		7.3	7.4	7.3		
	H_2O (1:1)		6.3	6.7	6.2		
Organic Matter (humus) %			1.57	1.58	1.64		
Estimated Nitrogen Release		lb/A	51	52	53		
ANIONS — SOLUBLE SULFUR*		ppm	8	8	7		
ANIONS — PHOSPHORUS — MEHLICH III		lb/A P as P_2O_5	115	78	64		
		ppm of P					
ANIONS — PHOSPHORUS — BRAY II		lb/A P as P_2O_5					
		ppm of P					
ANIONS — PHOSPHORUS — OLSEN		lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*		lb/A	3880	3622	2566		
		ppm					
EXCHANGEABLE CATIONS — MAGNESIUM*		lb/A	618	478	290		
		ppm					
EXCHANGEABLE CATIONS — POTASSIUM*		lb/A	174	144	112		
		ppm					
EXCHANGEABLE CATIONS — SODIUM*		lb/A	68	62	44		
		ppm					
BASE SATURATION PERCENT							
Calcium		%	64.75	72.32	67.53		
Magnesium		%	17.19	15.91	12.72		
Potassium		%	1.49	1.47	1.51		
Sodium		%	0.99	1.08	1.01		
Other Bases		%	5.10	4.70	5.20		
Hydrogen		%	10.50	4.50	12.00		
EXTRACTABLE MINORS							
Boron* (ppm)			0.46	0.40	0.37		
Iron* (ppm)			285	239	294		
Manganese* (ppm)			37	58	49		
Copper* (ppm)			2.60	2.53	1.45		
Zinc* (ppm)			3.19	4.63	2.43		
Aluminum* (ppm)			464	415	356		
OTHER TESTS — Soluble Salts (mmhos/cm)							
OTHER TESTS — Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 12/17/2015

Sample Location	THURMAN		1	1	1	1	
Sample Identification			1A	1B	1C	1D	
Lab Number			1237-1	1238-1	1239-1	1240-1	
Total Exchange Capacity (ME/100 g)			8.12	8.98	10.04	12.10	
pH	Buffer (SMP/Sikora)		7.4	7.4	7.3	7.0	
	H_2O (1:1)		6.2	6.9	6.4	5.8	
Organic Matter (humus) %			1.66	1.63	1.68	1.53	
Estimated Nitrogen Release		lb/A	53	53	54	51	
ANIONS	SOLUBLE SULFUR*	ppm	12	10	10	10	
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	169	224	137	298	
		ppm of P					
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	2164	2700	2838	2816	
		ppm					
	MAGNESIUM*	lb/A	208	264	278	314	
		ppm					
	POTASSIUM*	lb/A	218	196	200	318	
		ppm					
	SODIUM*	lb/A	76	156	56	48	
		ppm					
BASE SATURATION PERCENT							
Calcium		%	66.63	75.17	70.67	58.18	
Magnesium		%	10.67	12.25	11.54	10.81	
Potassium		%	3.44	2.80	2.55	3.37	
Sodium		%	2.03	3.78	1.21	0.86	
Other Bases		%	5.20	4.50	5.00	5.80	
Hydrogen		%	12.00	1.50	9.00	21.00	
EXTRACTABLE MINORS							
Boron* (ppm)			0.43	0.48	0.39	0.44	
Iron* (ppm)			282	313	237	234	
Manganese* (ppm)			217	184	192	145	
Copper* (ppm)			2.40	2.50	2.25	2.01	
Zinc* (ppm)			3.94	3.90	2.92	3.43	
Aluminum* (ppm)			500	428	562	741	
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location	MCCULLOUGH		1	1	1	1	
Sample Identification			1A	1B	1C	1D	
Lab Number			0814-1	0815-1	0816-1	0817-1	
Total Exchange Capacity (ME/100 g)			10.19	9.34	9.78	10.86	
pH (H_2O 1:1)			6.0	6.5	6.0	5.5	
Organic Matter (humus) %			2.01	2.04	2.03	2.05	
Estimated Nitrogen Release		lb/A	60	61	61	61	
ANIONS	SOLUBLE SULFUR*	ppm	10	10	11	12	
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 ppm of P	96	188	142	206	
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 ppm of P	101	206	133	220	
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A ppm	2666	2858	2562	2284	
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A ppm	254	156	224	180	
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A ppm	200	190	248	244	
EXCHANGEABLE CATIONS	SODIUM*	lb/A ppm	60	64	60	62	
BASE SATURATION PERCENT							
Calcium		%	65.41	76.50	65.49	52.58	
Magnesium		%	10.39	6.96	9.54	6.91	
Potassium		%	2.52	2.61	3.25	2.88	
Sodium		%	1.28	1.49	1.33	1.24	
Other Bases		%	5.40	4.90	5.40	6.40	
Hydrogen		%	15.00	7.50	15.00	30.00	
EXTRACTABLE MINORS							
Boron* (ppm)			0.37	0.54	0.29	0.33	
Iron* (ppm)			139	221	133	170	
Manganese* (ppm)			127	212	136	155	
Copper* (ppm)			1.54	2.10	2.21	2.29	
Zinc* (ppm)			2.29	3.61	3.70	3.57	
Aluminum* (ppm)			571	514	604	577	
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location CLAY			1	1	1	1
Sample Identification			1A	1B	1C	1D
Lab Number			0818-1	0819-1	0820-1	0821-1
Total Exchange Capacity (ME/100 g)			9.17	10.58	13.55	10.72
pH (H_2O 1:1)			6.7	5.8	5.3	5.9
Organic Matter (humus) %			2.11	2.05	2.39	2.42
Estimated Nitrogen Release		lb/A	62	61	68	68
ANIONS	SOLUBLE SULFUR*	ppm	11	12	11	12
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	183	618	559	357
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	252	834	829	440
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2966	2556	2384	2660
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	130	216	312	254
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	190	258	310	270
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	60	56	44	62
BASE SATURATION PERCENT						
Calcium		%	80.86	60.40	43.99	62.03
Magnesium		%	5.91	8.51	9.59	9.87
Potassium		%	2.66	3.13	2.93	3.23
Sodium		%	1.42	1.15	0.71	1.26
Other Bases		%	4.70	5.80	6.80	5.60
Hydrogen		%	4.50	21.00	36.00	18.00
EXTRACTABLE MINORS						
Boron* (ppm)			0.61	0.51	0.67	0.38
Iron* (ppm)			246	458	423	297
Manganese* (ppm)			185	100	73	119
Copper* (ppm)			1.82	5.55	4.09	4.50
Zinc* (ppm)			2.94	7.67	10.20	8.65
Aluminum* (ppm)			458	520	655	550
OTHER TESTS	Soluble Salts (mmhos/cm)					
OTHER TESTS	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location CREWS			1	1	1	1	1
Sample Identification			1A	1B	1C	1D	1E
Lab Number			0822-1	0823-1	0824-1	0825-1	0826-1
Total Exchange Capacity (ME/100 g)			9.17	8.57	10.55	10.85	8.98
pH (H_2O 1:1)			6.7	6.2	5.6	6.2	6.0
Organic Matter (humus) %			2.09	2.08	2.06	2.39	2.21
Estimated Nitrogen Release		lb/A	62	62	61	68	64
ANIONS	SOLUBLE SULFUR*	ppm	12	12	13	11	11
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	655	431	302	188	183
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	971	591	334	197	179
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2832	2382	2222	3084	2430
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	162	154	222	186	150
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	262	256	328	272	246
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	110	80	68	68	60
BASE SATURATION PERCENT							
Calcium		%	77.21	69.49	52.65	71.06	67.65
Magnesium		%	7.36	7.49	8.77	7.14	6.96
Potassium		%	3.66	3.83	3.99	3.21	3.51
Sodium		%	2.61	2.03	1.40	1.36	1.45
Other Bases		%	4.70	5.20	6.20	5.20	5.40
Hydrogen		%	4.50	12.00	27.00	12.00	15.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.83	0.77	0.69	0.48	0.55
Iron* (ppm)			461	375	235	159	160
Manganese* (ppm)			97	132	136	154	181
Copper* (ppm)			3.67	3.78	2.82	1.37	1.58
Zinc* (ppm)			7.01	6.39	4.68	3.05	3.79
Aluminum* (ppm)			387	466	674	654	603
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-10

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location CREWS			1	1	1	1	1
Sample Identification			1F	1G	1H	1I	1J
Lab Number			0827-1	0828-1	0829-1	0830-1	0831-1
Total Exchange Capacity (ME/100 g)			11.34	10.86	11.52	10.32	9.28
pH (H_2O 1:1)			5.8	6.3	6.0	6.1	5.6
Organic Matter (humus) %			2.30	2.17	2.20	1.93	1.93
Estimated Nitrogen Release		lb/A	66	63	64	59	59
ANIONS	SOLUBLE SULFUR*	ppm	11	10	10	12	12
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 ppm of P	115	206	165	82	206
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 ppm of P	110	224	188	82	215
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A ppm	2838	3140	2998	2878	2142
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A ppm	204	204	298	212	100
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A ppm	194	280	218	162	238
EXCHANGEABLE CATIONS	SODIUM*	lb/A ppm	50	50	72	48	56
BASE SATURATION PERCENT							
Calcium		%	62.57	72.28	65.06	69.72	57.70
Magnesium		%	7.50	7.83	10.78	8.56	4.49
Potassium		%	2.19	3.31	2.43	2.01	3.29
Sodium		%	0.96	1.00	1.36	1.01	1.31
Other Bases		%	5.80	5.10	5.40	5.20	6.20
Hydrogen		%	21.00	10.50	15.00	13.50	27.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.32	0.42	0.31	0.21	0.22
Iron* (ppm)			154	171	190	153	236
Manganese* (ppm)			121	129	162	180	157
Copper* (ppm)			1.12	1.33	1.33	1.07	0.96
Zinc* (ppm)			1.70	3.24	2.64	1.58	1.81
Aluminum* (ppm)			651	595	642	662	531
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location CREWS			1	1	1	1	1
Sample Identification			1K	1L	1M	1N	1O
Lab Number			0832-1	0833-1	0834-1	0835-1	0836-1
Total Exchange Capacity (ME/100 g)			16.52	12.61	10.22	10.22	13.47
pH (H_2O 1:1)			5.1	5.4	5.8	5.6	5.4
Organic Matter (humus) %			1.76	1.89	2.19	1.94	1.83
Estimated Nitrogen Release		lb/A	55	58	64	59	57
ANIONS	SOLUBLE SULFUR*	ppm	11	11	9	10	13
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	110	69	87	64	73
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	110	64	92	64	64
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2412	2558	2530	2330	2634
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	468	216	208	162	278
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	206	168	144	174	212
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	68	50	48	48	56
BASE SATURATION PERCENT							
Calcium		%	36.50	50.71	61.89	57.00	48.89
Magnesium		%	11.80	7.14	8.48	6.60	8.60
Potassium		%	1.60	1.71	1.81	2.18	2.02
Sodium		%	0.89	0.86	1.02	1.02	0.90
Other Bases		%	7.20	6.60	5.80	6.20	6.60
Hydrogen		%	42.00	33.00	21.00	27.00	33.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.25	0.35	0.45	0.20	0.20
Iron* (ppm)			197	146	160	140	148
Manganese* (ppm)			96	121	142	140	141
Copper* (ppm)			1.21	0.92	0.83	0.79	0.77
Zinc* (ppm)			1.61	1.29	1.36	1.33	1.51
Aluminum* (ppm)			655	692	630	654	715
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-10

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location GRANDVIEW			1	1	1	1	1
Sample Identification			1A	1B	1C	1D	1E
Lab Number			0837-1	0838-1	0839-1	0840-1	0841-1
Total Exchange Capacity (ME/100 g)			9.49	9.54	10.22	8.17	9.91
pH (H_2O 1:1)			5.7	5.7	5.9	5.8	5.3
Organic Matter (humus) %			2.38	2.12	2.35	2.27	2.19
Estimated Nitrogen Release		lb/A	68	62	67	65	64
ANIONS	SOLUBLE SULFUR*	ppm	12	13	11	11	13
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	238	247	206	261	156
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	247	275	211	293	169
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2172	2202	2644	1990	1804
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	178	170	186	128	144
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	282	266	236	296	330
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	52	56	54	42	62
BASE SATURATION PERCENT							
Calcium		%	57.22	57.70	64.68	60.89	45.51
Magnesium		%	7.82	7.42	7.58	6.53	6.05
Potassium		%	3.81	3.57	2.96	4.64	4.27
Sodium		%	1.19	1.28	1.15	1.12	1.36
Other Bases		%	6.00	6.00	5.60	5.80	6.80
Hydrogen		%	24.00	24.00	18.00	21.00	36.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.40	0.47	0.37	0.50	0.75
Iron* (ppm)			186	213	256	192	235
Manganese* (ppm)			233	196	165	255	197
Copper* (ppm)			1.47	2.24	1.79	1.76	2.44
Zinc* (ppm)			2.82	5.13	3.83	3.59	5.18
Aluminum* (ppm)			592	488	391	616	481
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-10

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location GRANDVIEW						
Sample Identification		1	1	1	1	1
		1F	1G	1H	1I	1J
Lab Number		0842-1	0843-1	0844-1	0845-1	0846-1
Total Exchange Capacity (ME/100 g)		8.52	8.66	9.69	9.89	10.07
pH (H_2O 1:1)		6.0	5.4	6.2	6.0	5.4
Organic Matter (humus) %		2.28	2.22	2.36	2.35	2.37
Estimated Nitrogen Release	lb/A	66	64	67	67	67
ANIONS — SOLUBLE SULFUR*	ppm	15	16	14	13	14
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5 / ppm of P	362	289	412	266	256
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5 / ppm of P	389	261	476	311	256
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A / ppm	2106	1562	2622	2604	1924
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A / ppm	176	152	218	190	150
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A / ppm	444	420	304	310	376
EXCHANGEABLE CATIONS — SODIUM*	lb/A / ppm	98	72	78	78	76
BASE SATURATION PERCENT						
Calcium	%	61.80	45.09	67.65	65.82	47.77
Magnesium	%	8.61	7.31	9.37	8.00	6.21
Potassium	%	6.68	6.22	4.02	4.02	4.79
Sodium	%	2.50	1.81	1.75	1.71	1.64
Other Bases	%	5.40	6.60	5.20	5.40	6.60
Hydrogen	%	15.00	33.00	12.00	15.00	33.00
EXTRACTABLE MINORS						
Boron* (ppm)		0.82	0.60	0.61	0.79	0.49
Iron* (ppm)		281	224	298	229	206
Manganese* (ppm)		192	239	192	191	214
Copper* (ppm)		2.92	3.15	3.42	2.52	2.70
Zinc* (ppm)		6.49	6.43	6.28	5.46	5.08
Aluminum* (ppm)		456	559	484	469	556
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-10

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location GRANDVIEW						
		1	1	1	1	1
Sample Identification		1K	1L	1M	1N	1O
Lab Number		0847-1	0848-1	0849-1	0850-1	0851-1
Total Exchange Capacity (ME/100 g)		10.05	8.85	9.99	8.78	10.23
pH (H_2O 1:1)		5.4	5.9	6.0	6.2	6.4
Organic Matter (humus) %		2.16	2.44	2.13	2.03	2.23
Estimated Nitrogen Release	lb/A	63	69	63	61	65
ANIONS — SOLUBLE SULFUR*	ppm	13	12	18	15	15
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5 / ppm of P	348	169	316	234	513
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5 / ppm of P	344	165	298	224	609
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A / ppm	1948	2216	2568	2328	3004
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A / ppm	142	162	222	196	182
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A / ppm	358	320	312	268	256
EXCHANGEABLE CATIONS — SODIUM*	lb/A / ppm	68	64	94	134	92
BASE SATURATION PERCENT						
Calcium	%	48.46	62.60	64.26	66.29	73.41
Magnesium	%	5.89	7.63	9.26	9.30	7.41
Potassium	%	4.57	4.64	4.00	3.91	3.21
Sodium	%	1.47	1.57	2.05	3.32	1.96
Other Bases	%	6.60	5.60	5.40	5.20	5.00
Hydrogen	%	33.00	18.00	15.00	12.00	9.00
EXTRACTABLE MINORS						
Boron* (ppm)		0.46	0.63	0.54	0.41	0.59
Iron* (ppm)		272	196	207	189	374
Manganese* (ppm)		186	253	231	192	145
Copper* (ppm)		3.14	2.63	3.81	3.36	2.96
Zinc* (ppm)		6.42	4.78	7.14	5.89	6.14
Aluminum* (ppm)		504	555	585	514	418
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location GRANDVIEW			1	1	1	1	1
Sample Identification			1P	1Q	1R	1S	1T
Lab Number			0852-1	0853-1	0854-1	0855-1	0856-1
Total Exchange Capacity (ME/100 g)			8.01	8.49	10.20	9.63	9.30
pH (H_2O 1:1)			6.5	6.3	6.2	6.5	6.2
Organic Matter (humus) %			1.84	2.00	1.96	2.05	1.93
Estimated Nitrogen Release		lb/A	57	60	59	61	59
ANIONS	SOLUBLE SULFUR*	ppm	10	12	12	13	9
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	215	202	183	316	247
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	206	229	165	357	279
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2372	2404	2748	2866	2644
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	160	170	258	190	178
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	210	236	266	242	178
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	68	68	72	76	56
BASE SATURATION PERCENT							
Calcium		%	74.03	70.79	67.35	74.40	71.08
Magnesium		%	8.32	8.34	10.54	8.22	7.97
Potassium		%	3.36	3.56	3.34	3.22	2.45
Sodium		%	1.85	1.74	1.53	1.72	1.31
Other Bases		%	4.90	5.10	5.20	4.90	5.20
Hydrogen		%	7.50	10.50	12.00	7.50	12.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.39	0.47	0.54	0.48	0.47
Iron* (ppm)			244	175	168	289	269
Manganese* (ppm)			161	175	153	167	142
Copper* (ppm)			2.36	2.31	3.06	2.06	1.23
Zinc* (ppm)			4.38	4.61	5.73	4.81	2.37
Aluminum* (ppm)			364	476	606	433	404
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location GRANDVIEW			1	1	1	1
Sample Identification			1U	1V	1W	1X
Lab Number			0857-1	0858-1	0859-1	0860-1
Total Exchange Capacity (ME/100 g)			9.08	10.12	9.31	8.39
pH (H_2O 1:1)			5.8	6.8	5.6	6.0
Organic Matter (humus) %			2.19	2.24	2.12	2.09
Estimated Nitrogen Release		lb/A	64	65	62	62
ANIONS	SOLUBLE SULFUR*	ppm	10	13	12	11
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	247	334	270	151
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	284	380	302	174
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2218	3212	2030	2246
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	162	188	140	152
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	218	240	328	248
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	66	104	66	52
BASE SATURATION PERCENT						
Calcium		%	61.07	79.35	54.51	66.92
Magnesium		%	7.43	7.74	6.27	7.55
Potassium		%	3.08	3.04	4.52	3.79
Sodium		%	1.58	2.23	1.54	1.35
Other Bases		%	5.80	4.60	6.20	5.40
Hydrogen		%	21.00	3.00	27.00	15.00
EXTRACTABLE MINORS						
Boron* (ppm)			0.51	0.60	0.63	0.28
Iron* (ppm)			256	305	211	174
Manganese* (ppm)			189	172	184	193
Copper* (ppm)			1.64	2.22	1.95	1.48
Zinc* (ppm)			3.56	4.44	3.67	1.95
Aluminum* (ppm)			463	358	506	561
OTHER TESTS	Soluble Salts (mmhos/cm)					
OTHER TESTS	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location HESTER			1	1	1	1	1
Sample Identification			1A	1B	1C	1D	1E
Lab Number			0861-1	0862-1	0863-1	0864-1	0865-1
Total Exchange Capacity (ME/100 g)			9.39	8.73	9.24	8.38	12.25
pH (H_2O 1:1)			6.2	6.0	5.9	6.0	5.6
Organic Matter (humus) %			1.87	1.67	1.92	2.12	2.21
Estimated Nitrogen Release		lb/A	57	53	58	62	64
ANIONS	SOLUBLE SULFUR*	ppm	12	10	11	12	15
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	293	261	650	238	115
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	389	348	843	279	119
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2612	2266	2304	2226	2616
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	200	208	184	156	282
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	214	204	326	242	254
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	64	72	54	68	66
BASE SATURATION PERCENT							
Calcium		%	69.54	64.89	62.34	66.41	53.39
Magnesium		%	8.87	9.93	8.30	7.76	9.59
Potassium		%	2.92	3.00	4.52	3.70	2.66
Sodium		%	1.48	1.79	1.27	1.76	1.17
Other Bases		%	5.20	5.40	5.60	5.40	6.20
Hydrogen		%	12.00	15.00	18.00	15.00	27.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.50	0.26	0.33	0.60	0.34
Iron* (ppm)			356	342	482	370	248
Manganese* (ppm)			156	187	122	159	171
Copper* (ppm)			2.74	2.79	4.16	3.22	2.34
Zinc* (ppm)			5.30	5.57	12.49	5.71	3.34
Aluminum* (ppm)			532	513	529	508	664
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location HESTER			1	1			
Sample Identification			1F	1G			
Lab Number			0866-1	0867-1			
Total Exchange Capacity (ME/100 g)			10.90	12.08			
pH (H_2O 1:1)			5.6	5.5			
Organic Matter (humus) %			2.22	2.50			
Estimated Nitrogen Release		lb/A	64	70			
ANIONS	SOLUBLE SULFUR*	ppm	12	13			
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	87	119			
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	87	128			
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2308	2546			
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	266	216			
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	226	236			
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	52	52			
BASE SATURATION PERCENT							
Calcium		%	52.94	52.69			
Magnesium		%	10.17	7.45			
Potassium		%	2.66	2.50			
Sodium		%	1.04	0.94			
Other Bases		%	6.20	6.40			
Hydrogen		%	27.00	30.00			
EXTRACTABLE MINORS							
Boron* (ppm)			0.31	0.20			
Iron* (ppm)			210	204			
Manganese* (ppm)			160	146			
Copper* (ppm)			1.38	1.98			
Zinc* (ppm)			3.14	4.24			
Aluminum* (ppm)			684	700			
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location JERNIGAN						
Sample Identification		1	1	1	1	1
		1A	1B	1C	1D	1E
Lab Number		0868-1	0869-1	0870-1	0871-1	0872-1
Total Exchange Capacity (ME/100 g)		7.98	13.69	11.54	14.28	10.04
pH (H_2O 1:1)		5.8	5.6	5.8	5.4	6.2
Organic Matter (humus) %		2.10	2.18	2.36	2.14	2.03
Estimated Nitrogen Release	lb/A	62	64	67	63	61
ANIONS — SOLUBLE SULFUR*	ppm	12	12	12	12	16
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5 / ppm of P	192	78	87	119	110
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5 / ppm of P	179	73	92	128	133
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A / ppm	1962	3012	2834	2632	2652
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A / ppm	120	298	240	394	268
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A / ppm	250	204	192	194	156
EXCHANGEABLE CATIONS — SODIUM*	lb/A / ppm	52	52	54	70	168
BASE SATURATION PERCENT						
Calcium	%	61.47	55.00	61.40	46.08	66.04
Magnesium	%	6.27	9.07	8.67	11.50	11.12
Potassium	%	4.02	1.91	2.13	1.74	1.99
Sodium	%	1.42	0.83	1.02	1.07	3.64
Other Bases	%	5.80	6.20	5.80	6.60	5.20
Hydrogen	%	21.00	27.00	21.00	33.00	12.00
EXTRACTABLE MINORS						
Boron* (ppm)		0.20	0.20	0.24	0.23	0.29
Iron* (ppm)		197	162	173	233	257
Manganese* (ppm)		198	120	151	174	147
Copper* (ppm)		1.25	0.93	0.90	1.31	1.71
Zinc* (ppm)		3.48	1.59	2.07	1.81	1.71
Aluminum* (ppm)		601	731	664	642	512
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location JERNIGAN			1	1	1	1	1
Sample Identification			1F	1G	1H	1I	1J
Lab Number			0873-1	0874-1	0875-1	0876-1	0877-1
Total Exchange Capacity (ME/100 g)			11.13	10.17	15.53	10.99	11.71
pH (H_2O 1:1)			5.8	5.4	5.2	5.5	4.8
Organic Matter (humus) %			1.94	2.32	2.15	2.07	2.19
Estimated Nitrogen Release		lb/A	59	66	63	61	64
ANIONS	SOLUBLE SULFUR*	ppm	18	11	12	13	13
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	101	151	101	105	215
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	115	174	101	101	183
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2388	2060	2658	2316	1666
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	362	134	312	192	110
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	226	240	236	218	250
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	176	58	64	54	52
BASE SATURATION PERCENT							
Calcium		%	53.64	50.64	42.79	52.68	35.57
Magnesium		%	13.55	5.49	8.37	7.28	3.91
Potassium		%	2.60	3.03	1.95	2.54	2.74
Sodium		%	3.44	1.24	0.90	1.07	0.97
Other Bases		%	5.80	6.60	7.00	6.40	7.80
Hydrogen		%	21.00	33.00	39.00	30.00	49.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.20	0.26	0.20	0.20	0.20
Iron* (ppm)			223	237	216	169	206
Manganese* (ppm)			152	213	138	176	187
Copper* (ppm)			1.30	1.33	1.40	1.19	1.32
Zinc* (ppm)			1.49	3.38	2.17	2.74	4.03
Aluminum* (ppm)			566	601	697	680	661
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location JERNIGAN							
Sample Identification			1K	1L	1M	1N	1O
Lab Number			0878-1	0879-1	0880-1	0881-1	0882-1
Total Exchange Capacity (ME/100 g)			8.28	10.09	8.59	9.67	8.89
pH (H_2O 1:1)			5.4	5.5	5.8	5.7	5.4
Organic Matter (humus) %			1.94	2.16	1.86	1.88	1.91
Estimated Nitrogen Release		lb/A	59	63	57	58	58
ANIONS	SOLUBLE SULFUR*	ppm	11	11	11	12	15
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	151	147	101	133	101
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	156	188	92	137	96
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	1686	2172	2110	2244	1734
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	94	140	160	184	138
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	224	218	166	210	266
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	50	56	60	56	54
BASE SATURATION PERCENT							
Calcium		%	50.91	53.82	61.41	58.01	48.76
Magnesium		%	4.73	5.78	7.76	7.93	6.47
Potassium		%	3.47	2.77	2.48	2.78	3.84
Sodium		%	1.31	1.21	1.52	1.26	1.32
Other Bases		%	6.60	6.40	5.80	6.00	6.60
Hydrogen		%	33.00	30.00	21.00	24.00	33.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.29	0.22	0.20	0.24	0.20
Iron* (ppm)			213	242	214	211	148
Manganese* (ppm)			204	251	233	206	230
Copper* (ppm)			0.82	1.41	1.21	1.06	1.06
Zinc* (ppm)			3.17	3.09	2.09	1.99	1.96
Aluminum* (ppm)			584	578	592	642	743
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location JERNIGAN			1	1	1	1	1
Sample Identification			1P	1Q	1R	1S	1T
Lab Number			0883-1	0884-1	0885-1	0886-1	0887-1
Total Exchange Capacity (ME/100 g)			8.92	15.56	8.44	8.96	10.94
pH (H_2O 1:1)			5.7	5.2	5.3	7.2	5.8
Organic Matter (humus) %			1.86	1.88	1.81	2.08	2.03
Estimated Nitrogen Release		lb/A	57	58	56	62	61
ANIONS	SOLUBLE SULFUR*	ppm	10	14	15	14	15
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	87	87	142	124	110
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	82	78	128	156	115
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2106	2526	1494	2500	2484
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	142	396	134	338	328
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	216	238	322	176	136
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	52	60	56	324	118
BASE SATURATION PERCENT							
Calcium		%	59.02	40.58	44.25	69.75	56.76
Magnesium		%	6.63	10.60	6.62	15.72	12.49
Potassium		%	3.10	1.96	4.89	2.52	1.59
Sodium		%	1.27	0.84	1.44	7.86	2.34
Other Bases		%	6.00	7.00	6.80	4.20	5.80
Hydrogen		%	24.00	39.00	36.00	0.00	21.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.21	0.20	0.33	0.40	0.20
Iron* (ppm)			165	170	190	261	273
Manganese* (ppm)			180	95	229	185	156
Copper* (ppm)			1.11	0.84	0.71	1.54	1.85
Zinc* (ppm)			1.82	1.03	1.17	1.48	1.76
Aluminum* (ppm)			631	900	753	463	571
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

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SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location JERNIGAN			1	1	1	1
Sample Identification			1U	1V	1W	1X
Lab Number			0888-1	0889-1	0890-1	0891-1
Total Exchange Capacity (ME/100 g)			9.73	9.22	9.56	11.28
pH (H_2O 1:1)			6.0	6.1	6.1	5.2
Organic Matter (humus) %			1.85	2.01	1.65	1.92
Estimated Nitrogen Release		lb/A	57	60	53	58
ANIONS	SOLUBLE SULFUR*	ppm	15	12	12	13
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 / ppm of P	105	151	156	156
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 / ppm of P	115	220	169	156
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 / ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*	lb/A / ppm	2442	2384	2566	2030
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A / ppm	256	238	228	156
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A / ppm	138	218	214	194
EXCHANGEABLE CATIONS	SODIUM*	lb/A / ppm	182	122	60	54
BASE SATURATION PERCENT						
Calcium		%	62.74	64.64	67.10	44.99
Magnesium		%	10.96	10.76	9.94	5.76
Potassium		%	1.82	3.03	2.87	2.20
Sodium		%	4.07	2.88	1.36	1.04
Other Bases		%	5.40	5.20	5.20	7.00
Hydrogen		%	15.00	13.50	13.50	39.00
EXTRACTABLE MINORS						
Boron* (ppm)			0.21	0.37	0.22	0.20
Iron* (ppm)			280	288	236	166
Manganese* (ppm)			188	189	205	179
Copper* (ppm)			1.63	1.35	2.04	1.99
Zinc* (ppm)			1.57	1.61	2.77	3.16
Aluminum* (ppm)			494	471	546	695
OTHER TESTS	Soluble Salts (mmhos/cm)					
OTHER TESTS	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

55117-10

SOIL AUDIT AND INVENTORY REPORT

Name William Thompson III City _____ State _____

Independent Consultant Jenkins Precision Ag Services LLC Date 1/12/2017

Sample Location WINTERS			1	1	1		
Sample Identification			1A	1B	1C		
Lab Number			0892-1	0893-1	0894-1		
Total Exchange Capacity (ME/100 g)			12.63	13.97	13.11		
pH (H_2O 1:1)			5.9	5.8	6.2		
Organic Matter (humus) %			2.09	2.20	2.17		
Estimated Nitrogen Release		lb/A	62	64	63		
ANIONS	SOLUBLE SULFUR*	ppm	11	12	11		
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5 ppm of P	96	87	211		
ANIONS / PHOSPHORUS	BRAY II	lb/A P as P_2O_5 ppm of P	96	96	220		
ANIONS / PHOSPHORUS	OLSEN	lb/A P as P_2O_5 ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A ppm	3244	3344	3700		
EXCHANGEABLE CATIONS	MAGNESIUM*	lb/A ppm	266	322	266		
EXCHANGEABLE CATIONS	POTASSIUM*	lb/A ppm	238	310	296		
EXCHANGEABLE CATIONS	SODIUM*	lb/A ppm	58	58	54		
BASE SATURATION PERCENT							
Calcium		%	64.21	59.84	70.56		
Magnesium		%	8.78	9.60	8.45		
Potassium		%	2.42	2.84	2.89		
Sodium		%	1.00	0.90	0.90		
Other Bases		%	5.60	5.80	5.20		
Hydrogen		%	18.00	21.00	12.00		
EXTRACTABLE MINORS							
Boron* (ppm)			0.20	0.20	0.39		
Iron* (ppm)			157	147	186		
Manganese* (ppm)			112	94	103		
Copper* (ppm)			2.42	2.26	2.23		
Zinc* (ppm)			3.26	2.48	3.18		
Aluminum* (ppm)			744	844	766		
OTHER TESTS	Soluble Salts (mmhos/cm)						
OTHER TESTS	Chlorides (ppm)						

* Mehlich III Extractable

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Field: Benson Crop
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 75	2	
RUSLE2	0.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	60 lbs/ac (Mehlich-3 ICP)	1	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	3	
	Phosphorus Index (Site Total x Management Total)	36	Low

Field: Benson Crop
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 74	2	
RUSLE2	1.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	60 lbs/ac (Mehlich-3 ICP)	1	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	18	
	Phosphorus Index (Site Total x Management Total)	216	Medium

Field: Benson Crop
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 74	2	
RUSLE2	1.3 t/ac	1	
Permanent veg. buffer	None	8	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	60 lbs/ac (Mehlich-3 ICP)	1	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	3	
	Phosphorus Index (Site Total x Management Total)	36	Low

Field: Benson Crop
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 74	2	
RUSLE2	2.0 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	60 lbs/ac (Mehlich-3 ICP)	1	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	More than 45 days before planting	4	
Application method	Injected	1	
	Management Total	21	
	Phosphorus Index (Site Total x Management Total)	252	Medium

Field: Benson Crop
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 76	2	
RUSLE2	1.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	60 lbs/ac (Mehlich-3 ICP)	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	3	
	Phosphorus Index (Site Total x Management Total)	36	Low

Field: Benson Berm
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 68	1	
RUSLE2	0.0 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	55 lbs/ac (Mehlich-3 ICP)	1	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	3	
	Phosphorus Index (Site Total x Management Total)	33	Low

Field: Benson Berm
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 68	1	
RUSLE2	0.1 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	55 lbs/ac (Mehlich-3 ICP)	1	
P application rate	Total P_2O_5 applied (all sources): 162 lbs/ac	16	
Application timing	Actively growing crop	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Benson Berm
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 67	1	
RUSLE2	0.0 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	55 lbs/ac (Mehlich-3 ICP)	1	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	3	
	Phosphorus Index (Site Total x Management Total)	33	Low

Field: Benson Berm
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 66	1	
RUSLE2	0.0 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	55 lbs/ac (Mehlich-3 ICP)	1	
P application rate	Total P_2O_5 applied (all sources): 162 lbs/ac	16	
Application timing	Actively growing crop	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Benson Berm
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 67	1	
RUSLE2	0.0 t/ac	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	55 lbs/ac (Mehlich-3 ICP)	1	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	3	
	Phosphorus Index (Site Total x Management Total)	33	Low

Field: Clay
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 74	1	
RUSLE2	2.3 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	183 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Clay
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 75	1	
RUSLE2	0.9 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Soil test P	183 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Clay
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 71	1	
RUSLE2	0.9 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	183 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Clay
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 70	1	
RUSLE2	0.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	183 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Clay
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 69	1	
RUSLE2	0.9 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	183 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	16-45 days before planting	2	
Application method	Injected	1	
	Management Total	20	
	Phosphorus Index (Site Total x Management Total)	220	Medium

Field: Crews
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 83	4	
RUSLE2	5.8 t/ac	4	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	17	
Management Characteristics			
Soil test P	64 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 151 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	323	High

Field: Crews
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 83	4	
RUSLE2	4.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	14	
Management Characteristics			
Soil test P	64 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	56	Low

Field: Crews
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 82	4	
RUSLE2	6.4 t/ac	4	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	17	
Management Characteristics			
Soil test P	64 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 151 lbs/ac	15	
Application timing	More than 45 days before planting	4	
Application method	Injected	1	
	Management Total	22	
	Phosphorus Index (Site Total x Management Total)	374	High

Field: Crews
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 84	4	
RUSLE2	4.2 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	14	
Management Characteristics			
Soil test P	64 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	56	Low

Field: Crews
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 83	4	
RUSLE2	4.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	14	
Management Characteristics			
Soil test P	64 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 151 lbs/ac	15	
Application timing	16-45 days before planting	2	
Application method	Injected	1	
	Management Total	20	
	Phosphorus Index (Site Total x Management Total)	280	High

Field: Cypress Creek
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 75	2	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	48	Low

Field: Cypress Creek
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 74	2	
RUSLE2	1.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 296 lbs/ac	30	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	34	
	Phosphorus Index (Site Total x Management Total)	408	Very high

Field: Cypress Creek
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 74	2	
RUSLE2	1.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	48	Low

Field: Cypress Creek
Crop Year: 2020

Tennessee Phosphorus Index

Operation: Cypress Creek ***County:*** Obion ***Plan Saved:*** 4/11/2017
Plan File: Thompson2017.mmp ***State:*** Tennessee ***Init. File Rev:*** 4/6/2015
Plan Folder: I:\CNMP NMP\MMP\Hog Barn Export\Thompson ***Soils File Rev:*** 1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 76	2	
RUSLE2	2.1 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	228	Medium

Field: Cypress Creek
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 4%, RCN: 75	2	
RUSLE2	1.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	48	Low

Field: Duck Hole
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 69	1	
RUSLE2	0.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	11	
Management Characteristics			
Soil test P	101 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Duck Hole
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	101 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 177 lbs/ac	18	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	22	
	Phosphorus Index (Site Total x Management Total)	242	Medium

Field: Duck Hole
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	101 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Duck Hole
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 69	1	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	101 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Duck Hole
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 69	1	
RUSLE2	0.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	101 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: GrandView
Crop Year: 2017

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 2%, RCN: 78	2	
RUSLE2	1.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 103 lbs/ac	10	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	14	
	Phosphorus Index (Site Total x Management Total)	168	Medium

Field: GrandView
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 2%, RCN: 78	2	
RUSLE2	1.2 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	48	Low

Field: GrandView
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 2%, RCN: 77	2	
RUSLE2	1.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 151 lbs/ac	15	
Application timing	16-45 days before planting	2	
Application method	Injected	1	
	Management Total	20	
	Phosphorus Index (Site Total x Management Total)	240	Medium

Field: GrandView
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 2%, RCN: 78	2	
RUSLE2	1.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	48	Low

Field: GrandView
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 2%, RCN: 78	2	
RUSLE2	1.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	151 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 151 lbs/ac	15	
Application timing	More than 45 days before planting	4	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	Injected	1	
	Management Total	22	
	Phosphorus Index (Site Total x Management Total)	264	Medium

Field: Hester
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 73	1	
RUSLE2	1.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Hester
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 74	1	
RUSLE2	0.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Hester
Crop Year: 2019

Tennessee Phosphorus Index

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Hester
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Hester
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 67	1	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	11	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	More than 45 days before planting	4	
Application method	Injected	1	
	Management Total	22	
	Phosphorus Index (Site Total x Management Total)	242	Medium

Field: Jernigan
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 69	1	
RUSLE2	0.3 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	78 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Jernigan
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 67	1	
RUSLE2	0.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	78 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Jernigan
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 67	1	
RUSLE2	0.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	78 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Jernigan
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 69	1	
RUSLE2	0.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	78 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Jernigan
Crop Year: 2021

Tennessee Phosphorus Index

Operation: Cypress Creek ***County:*** Obion ***Plan Saved:*** 4/11/2017
Plan File: Thompson2017.mmp ***State:*** Tennessee ***Init. File Rev:*** 4/6/2015
Plan Folder: I:\CNMP NMP\MMP\Hog Barn Export\Thompson ***Soils File Rev:*** 1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	78 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Mammaw
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 75	1	
RUSLE2	0.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	1500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	69 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Mammaw
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 74	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	1500 ft	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	11	
Management Characteristics			
Soil test P	69 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Mammaw
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 74	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	1500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	69 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Mammaw
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 76	1	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	1500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	69 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Mammaw
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 75	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	1500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	69 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: McCullough
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 79	1	
RUSLE2	1.4 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	768 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	96 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: McCullough
Crop Year: 2018

Tennessee Phosphorus Index

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 79	1	
RUSLE2	0.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	768 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	96 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: McCullough
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 75	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	768 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	96 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: McCullough
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 75	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	768 ft	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	11	
Management Characteristics			
Soil test P	96 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: McCullough
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 75	1	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	768 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	96 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	16-45 days before planting	2	
Application method	Injected	1	
	Management Total	20	
	Phosphorus Index (Site Total x Management Total)	220	Medium

Field: Thurman
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 74	1	
RUSLE2	1.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	137 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Thurman
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 74	1	
RUSLE2	0.5 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	137 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Thurman
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.7 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	137 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	209	Medium

Field: Thurman
Crop Year: 2020

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.6 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	137 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	44	Low

Field: Thurman
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 1%, RCN: 68	1	
RUSLE2	0.8 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	500 ft	1	
	Site Total	11	
Management Characteristics			
Soil test P	137 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	16-45 days before planting	2	
Application method	Injected	1	
	Management Total	20	
	Phosphorus Index (Site Total x Management Total)	220	Medium

Field: Winters
Crop Year: 2017

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 81	4	
RUSLE2	1.1 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
	Site Total	14	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	56	Low

Field: Winters
Crop Year: 2018

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 80	2	
RUSLE2	2.2 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	228	Medium

Field: Winters
Crop Year: 2019

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 80	2	
RUSLE2	2.0 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	12	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	

Tennessee Phosphorus Index

Operation:	Cypress Creek	***County:***	Obion	***Plan Saved:***	4/11/2017
Plan File:	Thompson2017.mmp	***State:***	Tennessee	***Init. File Rev:***	4/6/2015
Plan Folder:	I:\CNMP NMP\MMP\Hog Barn Export\Thompson			***Soils File Rev:***	1/11/2016

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	48	Low

Field: Winters
Crop Year: 2020

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 82	4	
RUSLE2	3.0 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	14	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	Total P_2O_5 applied (all sources): 148 lbs/ac	15	
Application timing	W/in 15 days before planting	1	
Application method	Injected	1	
	Management Total	19	
	Phosphorus Index (Site Total x Management Total)	266	Medium

Field: Winters
Crop Year: 2021

Site Information	Information Used to Determine P Loss Rating	Value for P Index Calculation	
Site Characteristics			
Runoff class	Slope: 7%, RCN: 81	4	
RUSLE2	2.3 t/ac	1	
Permanent veg. buffer	None	8	
Non-application width from surface water	100 ft	1	
	Site Total	14	
Management Characteristics			
Soil test P	87 lbs/ac (Mehlich-3 ICP)	2	
P application rate	None applied	0	
Application timing	None applied	1	
Application method	None applied	1	
	Management Total	4	
	Phosphorus Index (Site Total x Management Total)	56	Low